Effective Health Care

Imaging Techniques for Screening of Lung Cancer
Nomination Summary Document

Results of Topic Selection Process & Next Steps

- The topic, *Imaging Techniques for Screening of Lung Cancer*, was found to be addressed by a 2013 systematic review. Based on this publication, the US Preventive Services Task Force (USPSTF) issued a draft recommendation statement. Given that the existing report and ongoing work cover this nomination, no further activity will be undertaken on this topic.

  Humphrey LL, Deffebach M, Pappas M, Baumann C, Artis K, Mitchell JP, Zakher B, Fu R, Slatore CG. Screening for Lung Cancer with Low-Dose Computed Tomography: A Systematic Review to Update the U.S. Preventive Services Task Force Recommendation. AHRQ Publication No. 13-05196-EF-4. July 2013. Available at http://annals.org/article.aspx?articleid=1721248

  US Preventive Services Task Force. Screening for Lung Cancer: Draft Recommendation Statement. AHRQ Publication No. 13-05196-EF-3. Available at http://www.uspreventiveservicestaskforce.org/draftrec.htm

  To sign up for notification when this and other USPSTF topics are posted, please go to: http://www.ahrq.gov/clinic/prevenix.htm.

Topic Description

Nominator(s): Individual

Nomination Summary: The nominator is interested in the comparative effectiveness of imaging techniques and strategies (e.g., computed tomography scan [CT scan], chest X-ray, tomosynthesis, fluorodeoxyglucose positron emission tomography [FDG-PET]) for the screening of lung cancer among high risk populations as well as among the general population. The nominator is also interested in the techniques and strategies with minimal risks, side effects and harms (e.g., exposure to radiation, false negatives and false positives).

Staff-Generated PICO
Population(s): Individuals who are at risk for lung cancer, including individuals at high risk (e.g., those with a history of tobacco use or occupational exposure to carcinogenic materials) as well as the general population
Intervention(s): Imaging techniques and strategies for the screening of lung cancer among the high risk as well as the general population, including diagnostic CT scans, chest X-ray, tomosynthesis, FDG-PET and biopsies.
Comparator(s): All other screening options
Outcome(s): Early detection of lung cancers that are in more treatable stages of the disease; effective lung cancer screening for different populations; decreased risks, side

effects and harms (e.g., exposure to radiation, false negatives, false positives)

Key Questions from Nominator:

1. What is the comparative effectiveness of imaging techniques and strategies for the screening of lung cancer among high risk patients and the general population?
2. What are the risk, side effects and harms associated with lung cancer screening among high risk patients and the general population?

Considerations

- The topic meets EHC Program appropriateness and importance criteria. (For more information, see http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/.)
- Lung cancer is the leading cause of cancer deaths in the US. Part of lung cancer's high mortality is due to the often late stage of disease at the time of diagnosis. Therefore, effective screening programs that target appropriate groups may allow lung cancers to be detected at earlier, more treatable stages. Also, effective screening practices may help people at lower risk to avoid the harms of screening, such as false-positive results and unnecessary follow-up procedures including needle biopsies and bronchoscopies.
- Topic was found to be addressed by a 2013 systematic review conducted by the Agency for Healthcare Research and Quality (AHRQ) entitled "Screening for Lung Cancer with Low-Dose Computed Tomography: A Systematic Review to Update the US Preventive Services Task Force Recommendation". Key questions from this report include:
    1. How effective is screening for lung cancer in reducing morbidity and mortality?
        a. How effective is screening in persons at average risk?
        b. How effective is screening in persons at higher risk for lung cancer (e.g., current or former smokers)?
        c. Does effectiveness differ by subgroup (e.g., sex, age, race, presence of comorbid conditions, and other lung cancer risk factors)?
    2. What are the test characteristics (sensitivity, specificity, and predictive value) of screening tests for lung cancer?
        a. How do these test characteristics vary by lung cancer risk?
        b. How do test characteristics differ by subgroup (e.g., sex, age, and race)?
    3. What are the harms associated with lung cancer screening, and are there ways to modify harms (e.g., unnecessary biopsies, radiation exposure, overdiagnosis, and psychosocial harms)?
    4. How effective is surgical resection for the treatment of early (stage IA) non-small-cell lung cancer?
    5. What are the harms associated with surgical resection of early (stage IA) non-small-cell lung cancer?
- Based on the 2013 AHRQ publication, the US Preventive Services Task Force (USPSTF) issued a draft recommendation statement ("Screening for Lung Cancer: Draft Recommendation Statement") that recommends annual screening for lung cancer with LDCT in persons at high risk for lung cancer based on age and smoking history.