

# Weighing the Benefits and Risks of Lung Cancer Screening

January 11, 2013

By [Otis W. Brawley, MD, FACP](#)

This week the American Cancer Society announces its lung cancer screening guidelines. In short, we recommend that health care professionals with access to high-quality [lung cancer](#) screening and treatment centers should discuss screening with **healthy patients aged 55 years to 74 years who have at least a 30-year history of pack-a-day cigarette smoking and who currently smoke or have quit within the past 15 years**. The health care professional and patient should discuss all the known benefits and known harms associated with lung cancer screening.

These guidelines were developed after a meticulous process in which a group of cancer screening and treatment experts reviewed all the major lung cancer screening studies that have been published over the past several decades.

## **Benefits vs. harm**

The National Lung Screening Trial (NLST), published in 2011, heavily influences this recommendation. The NLST is a well-designed clinical trial. It studied 53,454 men and women in good health, aged 55 and over and at high risk of lung cancer because of their smoking history. The study assigned half of them to the test group of low-dose spiral CT scan, and half of them to a control group that received the standard single view chest X-ray. Participants were screened 3 times over 2 years, then the number alive were assessed 5 to 7 years later.

There were 356 lung cancer deaths in those who'd gotten the CT scan, compared to 443 in the control X-ray group of the NLST. The difference of 87 lives saved from a lung cancer death represents a statistically significant 20% decrease in risk of lung cancer death. One way of looking at this is: among about 27,000 people screened with a CT scan, 87 lung cancer deaths were prevented, but 356 lung cancer deaths still occurred.

We need well-designed clinical trials such as the NLST to determine the benefit of lung cancer screening. A test can find disease and not result in lives saved. Also every test has a potential benefit and a potential harm. A screening recommendation should only be made when the benefit clearly justifies the risk of harm.

It is also important that we look at the harms of screening. Of the nearly 27,000 people who got 3 CT scans, 40% had an abnormal finding. They received additional diagnostic tests ranging from repeat CT scans to more invasive bronchoscopy (a tube placed in the mouth, down the throat and into the lungs), or even more invasive needle biopsies of the lung. More than 95% of these additional tests did **not** result in a cancer diagnosis.

Among those who got CT screening, a total of 16 participants died within 60 days after an invasive diagnostic procedure that was done to find out more about their abnormal finding (positive screen). Six of the 16 ultimately did **not** have lung cancer. It is not certain how many of these people died specifically due to the invasive procedure, but it does remind us that a screening test can lead to some dangerous diagnostic tests. Some have interpreted the NLST as showing that for every 5 to 6 lives saved from lung cancer, 1 life was lost due to screening and the additional diagnostic procedures.

The American Cancer Society recommends that screening be done at centers with expertise and experience in an effort to lower the number of false positive screens and extra diagnostic procedures

(like bronchoscopy or needle biopsy).

### **Highest Risk People See Most Benefit of Screening**

Cancer screening has the most benefit for those at high risk for death from the disease of focus, in this case, lung cancer. This is why the NLST focused on people over age 55 with a significant smoking history.

Non-smokers and people with a minimal or no history of smoking do get lung cancer, but they are at much lower risk. The American Cancer Society does not recommend screening for those at lower risk, **because the risk of harm from screening remains significant but there is little evidence of benefit.**

### **Informed Decision-Making is Key**

There is a trend in screening guidelines. More often guidelines are recommending that clinicians and patients make a decision after being informed of what is known concerning benefits, limitations, and harms associated with a screening test. And both health care professionals and patients appreciate and understand that there are limitations and harms associated with many screening tests. These limitations can include worry, the inconvenience of secondary testing, and the complications and risk of death associated with some diagnostic tests done due to abnormal results.

As technology improves, there is growing concern about the identification of some small tumors that are technically cancer but are actually of no threat. These "overdiagnosis" tumors may lead to unnecessary treatment, unnecessary complications, and unnecessary discomfort - at times even death - for the patient. For those of us in the medical profession, it's our job to keep these as few and far between as possible.

Still, for the group of people at high risk, the benefit of screening may outweigh the potential risks. If you fall into that group, tell your health care professional about your smoking history so he or she can begin a conversation with you about lung cancer screening.

**Dr. Brawley is chief medical and scientific officer for the American Cancer Society.**