

# Is yearly chest x-ray screening helpful in reducing mortality for smokers?

**Kimdary Chek, MD, MPH, Joseph Tribuna, MD**

Overlook Family Practice Residency, Summit, New Jersey

**Joan Nashelsky, MLS**

Family Practice Inquiries Network, Iowa City, Iowa

## EVIDENCE-BASED ANSWER

For current and former smokers, the evidence does not support yearly chest x-rays to decrease lung cancer mortality (strength of recommendation [SOR]: **A**, based on multiple randomized

controlled trials). Even with the addition of sputum cytology and more frequent chest x-rays, lung cancer mortality was unchanged (SOR: **A**).

## CLINICAL COMMENTARY

### Reduce morbidity and mortality by helping patients quit smoking

The bottom line is that morbidity and mortality are not reduced when we use chest x-rays, sputum cytology, or a combination of the 2 in screening for lung cancer. One thing we can do for our patients is counsel them about the ill effects of tobacco use and support them in their smoking cessation efforts. Although there is no guarantee that those who quit will not get lung

cancer, cessation certainly reduces the risk and brings other health and financial benefits.

Of interest is the ongoing National Lung Screening trial, which compares screening spiral CT scans with chest x-rays in the detection of lung cancer. This large trial, sponsored by the NCI, will compare both modalities over 8 years and should help determine if either test is better at reducing morbidity and mortality from this disease.

## ■ Evidence summary

Five randomized controlled trials have examined lung cancer mortality after screening chest x-rays. In the first trial—the only one that included former as well as current smokers and nonsmokers—subjects were randomized to undergo chest x-ray studies every 6 months, or at baseline and again at the end of the 3-year study. After 3 years, there was no statistically significant mortality difference with more frequent chest x-rays.<sup>1,2</sup>

Another trial involved male smokers who were randomized to undergo chest x-ray and sputum cytology either every 6 months or after 3 years. After 3 years, both groups were screened annually with chest x-ray alone for an additional 3 years. There was no significant difference in lung cancer mortality at any point, including at a 15-year post-trial follow-up.<sup>3</sup> Both studies showed earlier detection and longer

survivorship of lung cancer among screened vs nonscreened groups due to lead-time bias (because the cancer was detected earlier from screening vs clinical diagnosis, it falsely appears to prolong survival). Overall mortality was the same in both groups.

The National Cancer Institute (NCI) sponsored 3 randomized controlled trials on lung cancer screening for male smokers involving 3 major medical centers. The studies were designed to determine the incremental benefit of adding sputum cytology to chest x-ray screening. In 2 of the NCI studies, participants were randomly assigned to receive annual chest x-ray only or a dual screen with annual chest x-ray and sputum cytologies every 4 months. In both studies, there was no statistical difference in lung cancer mortality between the 2 groups.<sup>4,6</sup> The third NCI study randomized participants to chest

x-ray and sputum cytology either every 4 months or annually. Again, there was no significant difference in lung cancer mortality,<sup>4</sup> even after an extended follow-up of 20.5 years.<sup>7</sup> Adding sputum cytology to chest x-ray only improved lung cancer detection rates over chest x-ray alone.

A significant limitation of the 5 studies presented is that no true control or non-screening groups determined the real efficacy of screening chest x-rays vs no screening. The goal of a study of a screening program is to detect a disease early enough so that treatment can alter mortality. These uncontrolled studies of routine screening chest x-rays, no matter how frequently performed, do not meet this criteria for current and former smokers.

**Recommendations from others**

The US Preventive Services Task Force does not recommend for or against screening asymptomatic or high-risk persons for lung cancer with either low-dose computed tomography (CT), chest x-ray, sputum cytology, or a combination of these tests.<sup>8</sup> The American Cancer Society and American Academy of Family Physicians recommend against the use of chest x-ray or sputum cytology in asymptomatic high-risk persons.<sup>9,10</sup> The American College of Chest Physicians recommends against the use of serial chest x-rays for individuals without symptoms or without a history of cancer.<sup>11</sup> They do not comment about

high-risk groups—that is, current or former smokers.

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**FAST TRACK**

**The American Cancer Society, AAFP, and ACCP all recommend against serial chest x-rays for those without symptoms of lung cancer**

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