

Preventive medicine and screening

(JULY 2000)

TO THE EDITOR: Dr. Goldberg, in his article on preventive medicine and screening in the elderly,¹ did not comment on screening for lung cancer.

I believe that middle-aged and elderly high-risk patients (ie, those who smoke or have a history of asbestos exposure or both) should be screened for lung cancer. Lung cancer is the number-one cause of cancer death for men and women in the United States, accounting for more cancer deaths since 1930 than all other cancers combined. The 5-year survival rate is less than 15% and has not changed appreciably in the past 2 decades.

Randomized trials consistently demonstrate that chest x-ray screening gives significant advantage in stage distribution, resectability, and long-term survival in high-risk patients. If lung cancer is detected in its earliest stages, up to 70% of cases can be cured by surgery.² Three large, randomized, controlled trials of screening for early lung cancer—the Mayo Clinic, Memorial Sloan-Kettering Cancer Center, and Johns Hopkins trials—showed the benefits of screening in high-risk patients. These trials, sponsored by the National Cancer Institute, were perceived as negative because they failed to show a significant reduction in mortality. However, there is criticism that the Mayo Clinic trial underestimated the ability of chest x-rays to reduce the risk of dying of lung cancer.^{3,4} The assumption that mortality is the best measure of the effectiveness of screening was criticized as well.⁵ Moreover, the Mayo Clinic trial compared 4-monthly chest radiographs and sputum cytology against routine Mayo Clinic practice: annual chest films and sputum cytology in high-risk patients, defined as men aged 45 years or older who smoke one package of cigarettes or more each day.⁶ It was felt unethical not to offer annual screening to high-risk patients. I contacted the Mayo Clinic and found that the recommendation of screening high-risk individuals at least annually remains in effect today. An evidence-based synthesis supports the conclusion that chest films should become a standard for those at high risk for lung cancer.^{5,7}

Low-dose computed tomography (CT) is a better screening tool for lung cancer than chest radiographs.^{8,9} In the Early Lung Cancer Action Project, the prevalence rate of malignant lung nodules detected by CT in 1,000 smokers over the age of 60 was

2.7%. Of these 27 CT-detected cancers, 26 were resectable. Until low-dose CT is widely available, I believe that chest x-rays should be done annually in high-risk patients (ie, smokers), along with sputum cytology in patients at highest risk (ie, smokers with asbestos exposure).

There is strong evidence that screening for lung cancer improves survival. Reports from Japan indicate that survival significantly improved after a national screening program was launched. In one Japanese report,¹⁰ the median survival time in patients with non-small cell lung cancer was 1,220 days if the cancer was discovered on screening vs 248 days if the cancer was discovered by its symptoms; the 5-year survival rates were 44.4% vs 11.3%, and the 10-year survival rates were 34.9% vs 7.5%. For patients with small cell lung cancer, the median survival was 584 days if the cancer was discovered on screening vs 257 days if it was discovered by symptoms; the 5-year survival rates were 21.2% vs 4.8% and the 10-year survival rates were 15.9% vs 2.3%. In another study,¹¹ the 5-year survival rate increased to 54.4% with screening.

Even if lead-time bias (length bias) played a role in the perceived increased survival with screening, even if we merely diagnosed the disease earlier without increasing the life span, the effort is worthwhile. Even if the patient with lung cancer is destined to die, he deserves a good death. And it makes tremendous difference if he has a few weeks, a few months, or a few years left before he faces death. A recent study¹² identified six components of a good death: pain and symptom management, clear decision-making, preparation for death, completion, contributing to others, and affirmation of the whole person. Completion included faith issues, life review, resolving conflicts, spending time with family and friends, and saying good-bye. Even if we could not offer cure with screening we would give patients time to meet their psychological, spiritual, and social needs.

I dedicate this comment to Dana, my cousin who died within a few weeks after being diagnosed with metastatic lung cancer.

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IN REPLY: I appreciate the chance to comment on the thoughtful letter submitted by Dr. Galus in response to my recent article.¹ I have also corresponded with her personally.

In a brief, wide-ranging review article, there was not enough space to fully discuss all possible screening tests. Thus, the emphasis was on commonly recommended preventive measures. A discussion of lung cancer screening was omitted, as it is not usually recommended by authorities such as the conservative, evidence-based US Preventive Services Task Force,² nor even by the American Cancer Society,³ an advocacy group that usually offers more aggressive screening recommendations. This is because such trials as

the NCI/Mayo study cited by Dr. Galus have generally been interpreted as showing no significant mortality reduction with lung cancer screening.⁴

Dr. Galus does however offer some persuasive arguments that lung cancer screening might be more beneficial than has been appreciated, especially with more modern techniques such as low-dose CT. Further studies are needed to determine if this method is cost-effective and truly shows a reduction in cancer morbidity and mortality.

The value of preventive medicine always inevitably requires philosophic consideration and consensus. What methods are of how much value, to whom, and at what cost? How might we best spend our limited resources on improving public health? Even if lung cancer screening (eg, with CT scans) might save a certain number of lives, would it be better for society to invest in a large-scale screening program of this type vs further antismoking measures? Should Medicare or private health insurance plans be mandated to cover such testing, as opposed to other tests and treatments that might possibly benefit or be desired by some people? Such difficult decisions require further societal consensus, with viewpoints such as that of Dr. Galus deserving careful consideration.

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Low-dose spiral CT for lung cancer screening

(JANUARY 2001)

TO THE EDITOR: Lung cancer is one of the deadliest malignancies because it is typically not detected in the early stages when it is most curable. At the same time, the vast majority of curable lung cancers are now detected by chest x-rays and CT scans. The diagnostic power of CT scanning in the detection of early disease is well established and unambiguous, but its role as a screening tool is hotly debated, as the article by Jain and Arroliga on page 74 of this issue illustrates.

Scientists on both sides of the controversy have argued and will continue to argue the risks and benefits of low-dose spiral CT. However, the core of the issue is whether one should wait 10 years or more for the results of randomized trials or should one assume the validity of the promising results of the shorter cohort studies are valid?

While we wait for the results of the cost-effectiveness analyses and the effect on mortality of such a screening method, should we deny its potential benefit to the hundreds of thousands of patients who are at risk of developing lung cancer? Similar dilemmas surround established screening programs for breast, cervical, and prostate cancer but public awareness and pressure have put those programs on a fast track. The fact remains that lung cancer kills more people than breast, prostate, and colon cancer combined. Our immediate focus should be to maximize the benefit and minimize the risks of the CT screening program by establishing well-designed standardized protocols for the patients who could benefit from such a method. It is time to reach a consensus on what defines the highest lung cancer risks and aggressively identify and screen this particular population.

While it may be reasonable to await more data before proposing CT as a general population screening tool for the millions of current and former smokers, its value as a sensitive and accurate test for preclinical lung cancer detection is irrefutable and hence, it should be available and used for individual patients when the question arises and the risk is real.

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