CT Screening for Lung Cancer: How to Fulfill the Promise

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By David W. Johnstone, MD [4]

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Radiologic screening for lung cancer had a long and unsuccessful history until the advent of low-dose computed tomography (CT) screening and the completion of the National Lung Screening Trial (NLST), which demonstrated an improvement in lung cancer-specific mortality in a high-risk population.[1] This screening modality is now largely accepted in the United States and is reimbursed under Medicare and most commercial insurance plans.

Real-World Considerations

Most pulmonary lesions found during screening are not malignant. Expansion of the NLST eligibility criteria would result in more lung cancers detected in the United States but would require the screening of many more people to do so. Concerns about screening include overdiagnosis, overtreatment, and harm caused by procedures for benign lesions, as well as questions about the cost-effectiveness of this approach. Specifically, it is not known whether the NLST results will be reproduced when screening is conducted across the United States outside the rigor of a clinical trial. In this issue of ONCOLOGY, Kamel and colleagues provide a useful overview of the surgical issues raised by lung cancer screening.[2] Among the most important is the involvement of thoracic surgeons in the design and quality analyses of CT screening programs. This has been the approach at many academic centers, including ours, and leads to a multidisciplinary commitment to screening, which helps ensure smooth operations, appropriate marketing, good data acquisition, and appropriate quality review.

The authors stress the need for diagnostic and therapeutic algorithms within screening programs to ensure consistency and reduce unnecessary procedures and cost. One assumption underlying this recommendation is that the screened population is substantially subject to management by a particular healthcare system—an assumption at odds with the patchwork nature of American healthcare and the considerable mobility of our population. Medicare’s requirements for eligibility, uniform radiographic reporting, data collection, and registry participation do provide a strong incentive for national standardization, which ought to minimize ad hoc management of patients with screen-detected lung nodules.

When suspicious lesions are identified, minimally invasive approaches to diagnosis and treatment—which have very low morbidity—are preferable. As Kamel et al point out, surgeons should be certified in thoracic surgery and adept at minimally invasive approaches. Moreover, surgeons and pulmonologists consulted for screen-positive cases must be willing to observe some lesions that are not amenable to biopsy, such as deep small nodules and multiple ground-glass opacity lesions, or lesions that are biopsy-negative and not suitable for simple wedge resection. Although the authors cite excellent diagnostic yield from fine-needle aspiration in high-volume centers, it is not clear that such yields can be replicated in the broader medical community, where most patients are evaluated and treated.

The role of sublobar resection for small peripheral tumors is being defined by the trials described by Kamel et al, but also, in my opinion, by tacit adoption of smaller resection for these lesions ahead of confirmatory prospective clinical trial results. This trend coincides with the gradual maturation of experience in the use of stereotactic body radiation therapy (SBRT) for small lung tumors, an alternative to the sublobar approach. As we move forward, the increased incidence of small screen-detected lung cancers will undoubtedly be accompanied by vigorous debate, hopefully bolstered by prospective trial data, over the role of SBRT vs sublobar resection as primary therapy.
Key Role for Primary Care

Finally, we must embrace the essential work of primary care providers in lung cancer screening, a role they already play in colon and breast cancer screening. Discussion of screening should go hand in hand with consistent provision of smoking cessation resources, a task for primary care providers and specialists alike. For those launching screening programs, support for and from primary care networks is critical to sustained success.

In the long run, lung cancer screening will be seen as a primary care function that feeds multidisciplinary specialty programs for interpretation, surveillance, diagnosis, and treatment. Without both primary and specialty care arms, applied nationally and well, the promise of CT screening for lung cancer will not translate into meaningful improvement in public health.

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