



## Lung cancer screening: One step forward

I never expected, perhaps naively, that cancer screening would be so challenging and contentious. Over the last few years, we have seen vociferous debates about the utility of mammography, prostate-specific antigen screening, and, in our own pages 5 years ago, computed tomography (CT) screening for lung cancer (Cleve Clin J Med 2007; 74:769–770). Lung cancer is taking center stage again with new positive data on CT screening, but with a host of difficult questions on how to best implement screening. Dr. Peter Mazzone in this issue (page 337) reviews the recent National Lung Screening Trial and discusses how he and others are attempting to translate the findings of this trial into clinical practice.

Screening seems to be such an easy concept: look for cancer before it is symptomatic, find it at an early stage, and treat it. We should be more able to cure cancer if it is found during screening, or at least to significantly prolong the patient's survival by slowing the cancer's growth and metastasis. But exactly which screening strategies save lives (and what level of efficacy is cost-effective and risk-acceptable to society and individuals) has turned out to be difficult to prove in clinical trials.

For screening to be efficacious, the test must be able to detect cancer at a stage at which early treatment makes a difference. Herein lie two challenges. A person with a cancer that grows so slowly that early treatment may not make a survival difference will not benefit from screening, and neither will someone with cancer that is so aggressive that early treatment will not significantly slow its malignant outcome. The first scenario is called “overdiagnosis”—a diagnosis made during screening that may not affect the prognosis but can lead to significant anxiety as well as additional testing and treatments, with associated costs. This has yet to be fully addressed in lung cancer screening using repeated CT imaging, but it has been discussed in breast and prostate screening.

Other challenges include how individual physicians will implement a successful lung screening program, which is more complex than yearly mammography, requiring consecutive yearly CT screening with tracking of specific results and incidental findings. How will screening be limited to appropriate patients, as dictated by trial results? Will CT review be as successful in the community as it was in trial centers of excellence? Since smoking (an act of personal choice) is the major risk factor that warrants screening, who should bear the cost?

Then there are potential unintended consequences. What if lung cancer screening makes current smokers more complacent about continuing to smoke? We must increase our educational efforts on smoking cessation, efforts that I sense are having a disappointingly limited impact on the younger generation.

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