Physicians have more information to share with their patients about the use of low-dose computed tomography (low-dose CT) in lung cancer screening based on data from the first of three planned analyses of annual screening examinations performed in National Lung Screening Trial (NLST) participants. The findings were published in the *New England Journal of Medicine* on May 23, 2013.

NLST is a large-scale, longitudinal clinical trial that randomized 53,454 individuals at high risk of developing lung cancer to receive either low-dose CT or standard chest x-ray (CXR) to determine whether screening with the former could reduce mortality from lung cancer. (Initial study findings were published in *N Engl J Med.* 2011;365:395-409 and are also available as open access at NEJM.org.)

The recent analysis of the first annual screening examinations was undertaken to better understand the screening process, including the frequency and management of positive screens.

“Important insight we’ve learned from this analysis is that the number of biopsies compared with the number of positive screens is relatively small and that the majority of biopsies turned out to be cancer,” said Mitchell D. Schnall, MD, PhD, Group Co-Chair, ECOG-ACRIN Cancer Research Group and Chair, Department of Radiology, University of Pennsylvania.

In the analysis, the numbers of biopsies were 501 and 188 after low-dose CT and CXR, respectively; the numbers of positive screens were 7191 and 2387, respectively; and the cancer rates, as determined by biopsy, were 52.9% and 70.2%, respectively.

The advent of low-dose CT has altered the landscape of lung cancer screening, with previous studies indicating that the procedure could detect many tumors at early stages. Conducted by the National Cancer Institute’s Lung Screening Study Group and ACRIN (the latter component referenced as ACRIN 6654), ongoing NLST publications continue to inform the role of low-dose CT in the screening of lung cancer in a high-risk cohort (ie, current and former smokers aged 55-74 years, who had at least a 30 pack-year smoking history). Population-based results from NLST showed a 20% reduction in lung cancer mortality from screening with the use of low-dose CT vs. CXR, which confirmed other trial findings.

Schnall also highlighted the importance of positive predictive value (PPV) as a function of lung nodule size. “Nearly 20% of the cancers diagnosed were less than 11 mm, and the PPV for nodules greater than 10 mm was 11.9%,” he said. “Although we see that diagnostic accuracy is positively correlated with increasing lung nodule size, we would miss cancers if an attempt was made to reduce the number of positive diagnoses by increasing the cutoff size for a positive finding.”

The rate of compliance in performing low-dose CT, as specified in the research protocol across the 33 imaging facilities that carried out the NLST study, was high. In fact, these sites complied with the low-dose CT imaging protocol specifications in 98.5% of all studies performed. Dr. Schnall noted that the high compliance rate in performing the procedure was outstanding, given the large number of scans performed.