NELSON trial protocol more sensitive than NLST and may increase the benefits of lung cancer screening

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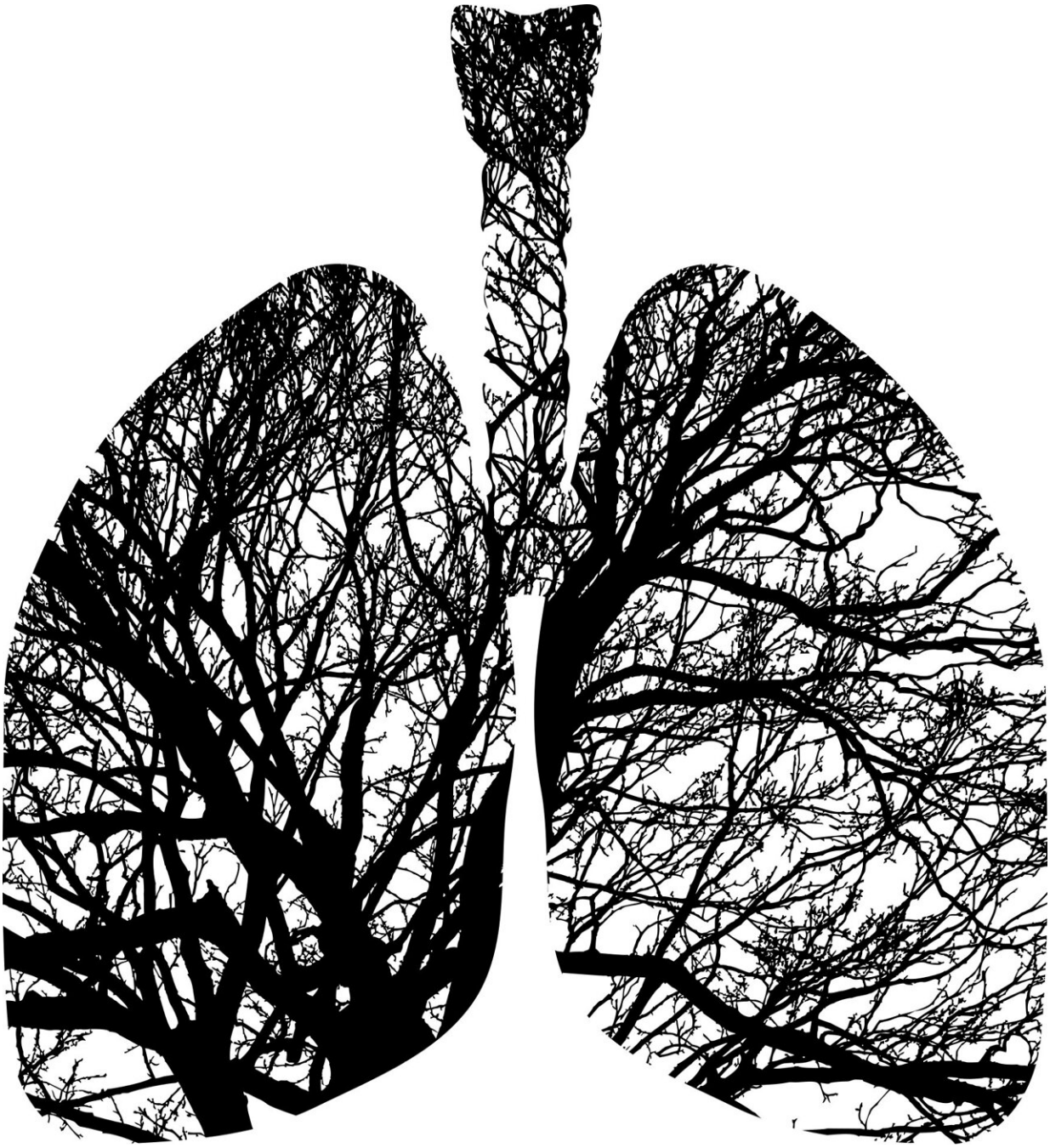

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The protocol used to screen and detect lung cancer in the NELSON Trial is more sensitive than the protocol used in the National Lung Cancer

Screening Trial, particularly for early-stage cancers, according to research reported today at the IASLC World Conference on Lung Cancer 2022 in Vienna.

The Dutch-Belgian lung cancer screening trial (Nederlands-Leuvens Longkanker Screenings Onderzoek [NELSON]) demonstrated a reduction in lung cancer mortality of 24% for screening with low-dose computed tomography (CT), compared to the 20% found in the National Lung Screening Trial.

The NELSON and NLST differed in study population and trial design. Specifically, in contrast to the NLST, the NELSON trial employed a nodule management protocol that incorporated nodule volume and quantified volume growth as opposed to nodule diameter.

"We evaluated how the difference in nodule management protocols affected the CT sensitivity across stage and histology in the trials," said Koen de Nijs, Erasmus University Medical Center Rotterdam, the Netherlands. In cancer screening, sensitivity is the ability of a screening method to detect cancer while it is still in the pre-clinical phase.

Mr. De Nijs and colleagues from the NELSON consortium employed the MISCAN-Lung model, previously used to evaluate the results of the NLST, to evaluate the outcomes of the NELSON trial. The model was used to reproduce lung cancer incidence and mortality by method of detection (clinical or screen-detected), sex, histology and stage.

"We evaluated the potential differences in CT sensitivity by stage and histology, after accounting for the characteristics of the study population, trial design and lung cancer epidemiology in each trial," he reported. For both trials, de Nijs considered a screening result a true positive when lung cancer was detected through the screening CT and related follow-up procedures.

Furthermore, previous research has shown that the protocol used in NELSON also had improved specificity. Nodule management protocols based on volumetry are therefore likely to increase the benefits of lung cancer screening, while reducing unnecessary follow-up procedures.

Mr. de Nijs found that the sensitivity in NELSON was estimated to be higher across all stages compared with the NLST. In particular, CT sensitivity was considerably higher for early-stage adenocarcinoma (for stage 1A, 73% in NELSON over 57% in the NLST, for stage 1B, 90% in NELSON vs 64% in the NLST) and stage 2 squamous cell carcinoma (75% in NELSON over 39% in the NLST).

"Model-based comparison of the NELSON and NLST suggests that the differences in screening effectiveness may be explained by differences in the nodule management protocols," said Mr. de Nijs. "The protocol used in NELSON was more sensitive than the protocol used in the NLST, particularly for early-stage cancers. Furthermore, the protocol used in NELSON also had improved specificity."

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Provided by International Association for the Study of Lung Cancer