

Novel software application can stratify early-stage non-small cell lung cancer patients

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Computer-Aided Nodule Assessment and Risk Yield, is a novel software tool developed at Mayo Clinic that can automatically quantitate adenocarcinoma pulmonary nodule characteristics from non-invasive high resolution computed tomography (HRCT) images and stratify non-small cell lung cancer (NSCLC) patients into risk groups that have significantly different disease-free survival outcomes.

The majority of NSCLC patients are diagnosed with advanced-stage disease which is concomitant with an exceptionally poor prognosis, 5-year survival rate of 4%. In contrast, tumors detected at an early stage have 5-year [survival rates](#) of 54%. The National Lung Cancer Screening Trial (NLST) demonstrated a 20% reduction in [lung-cancer](#) specific mortality by screening with HRCT, but many detected nodules are non-cancerous and slow-growing, which can lead to costly and risky overdiagnosis and overtreatment. Thus, better risk classification based on the nodules characteristics is desirable.

HRCT images from 264 clinical stage I pulmonary nodules of the [lung adenocarcinoma](#) spectrum were analyzed with the CANARY system and the software used an unsupervised clustering algorithm to classify the patients into categories of similar nodule characteristics.

The results published in the November issue of the *Journal of Thoracic Oncology*, the official journal for the International Association for the Study of Lung Cancer (IASLC), show that the adenocarcinomas naturally segregated into 3 groups based on HRCT characteristics. The

three identified groups corresponded to good, intermediate, and poor postoperative outcomes with 5-year disease-free survival rates of 100%, 73% and 51%, respectively.

"Our preliminary assessment suggests CANARY represents a robust risk stratification tool that can be utilized with a wide variety of HRCT techniques and equipment for retrospective or prospective evaluation of lung nodules in a real-world setting", conclude the authors. Dr. Raghunath, lead author of the study, suggests "HRCT-based CANARY classification could ultimately guide the individualized treatment of HRCT-detected lesions with nodules noninvasively categorized as "good" managed with less aggressive surgical approaches, noninvasive or minimally invasive therapy or watchful waiting, whereas nodules that have characteristics corresponding to the "poor" group would be managed with current standard of care, such as lobectomy, and perhaps additional adjuvant therapy."

More information: [journals.lww.com/jto/Abstract/...
tion_of_Lung.17.aspx](https://journals.lww.com/jto/Abstract/tion_of_Lung.17.aspx)

Provided by International Association for the Study of Lung Cancer

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