QIW XX Session 3:
Opportunities To Advance CT Lung Measurements Using CT Calibration & Artificial Intelligence
Panel Discussion

Stephen Lam MD, FRCPC

Professor of Medicine
University of British Columbia
Medical Director
BC Lung Cancer Screening Program
Vancouver, Canada

Lung nodule volume change measurements have better sensitivity and specificity for classifying malignant from benign lung nodules when applied to solid lung nodules from high-quality CT scans

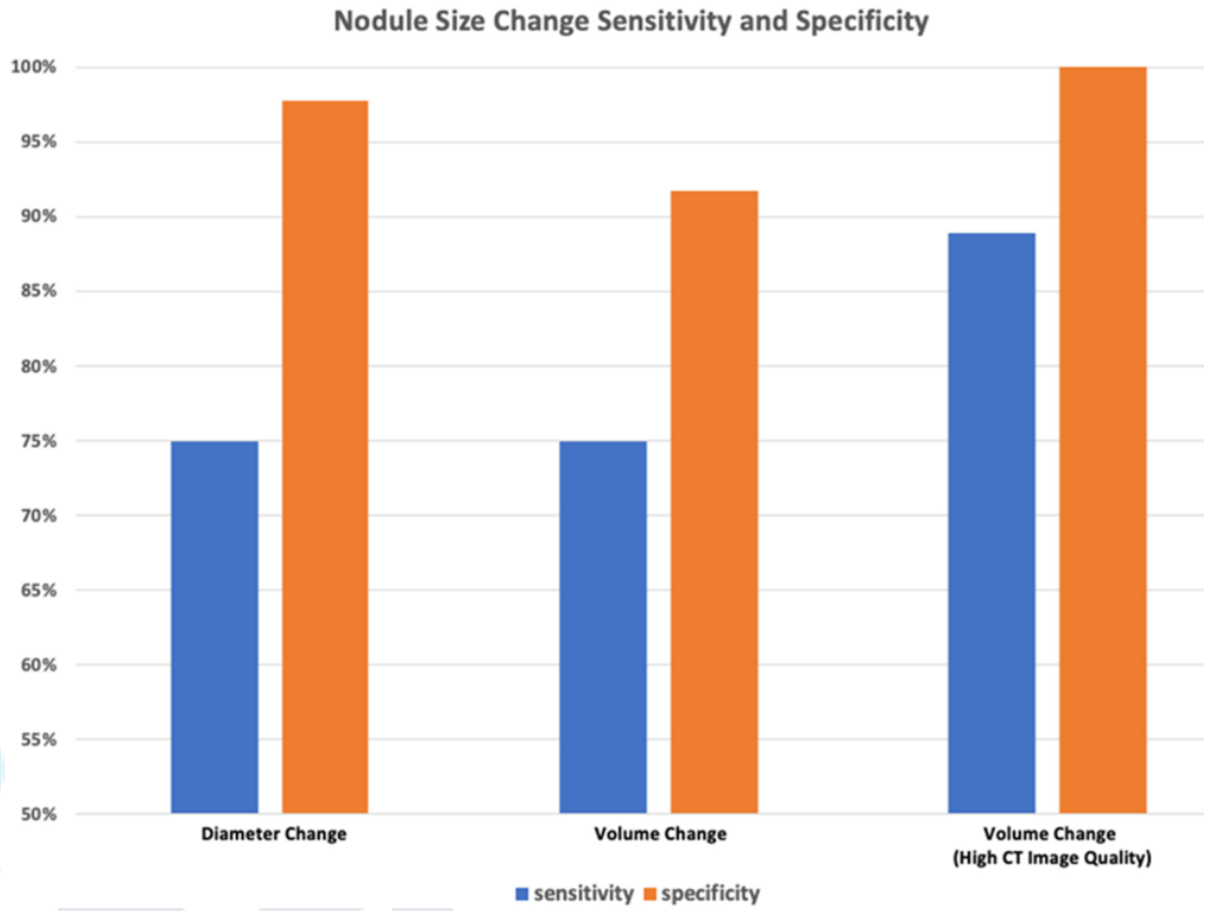


Table 4. The Mean Lung Nodule Volume Change and the COV for Malignant and Benign Solid Nodules in Data Subset 2

Number of Cases	Nodule Volume (mm^3)	Mean Volume Change (%)	COV
Non-lung cancer cases	<300	6.6	11.0
	≥300	−101.4	−4.7
Lung cancer cases	<300	346.9	0.9
	≥300	382.5	1.1

COV, coefficient of variation.

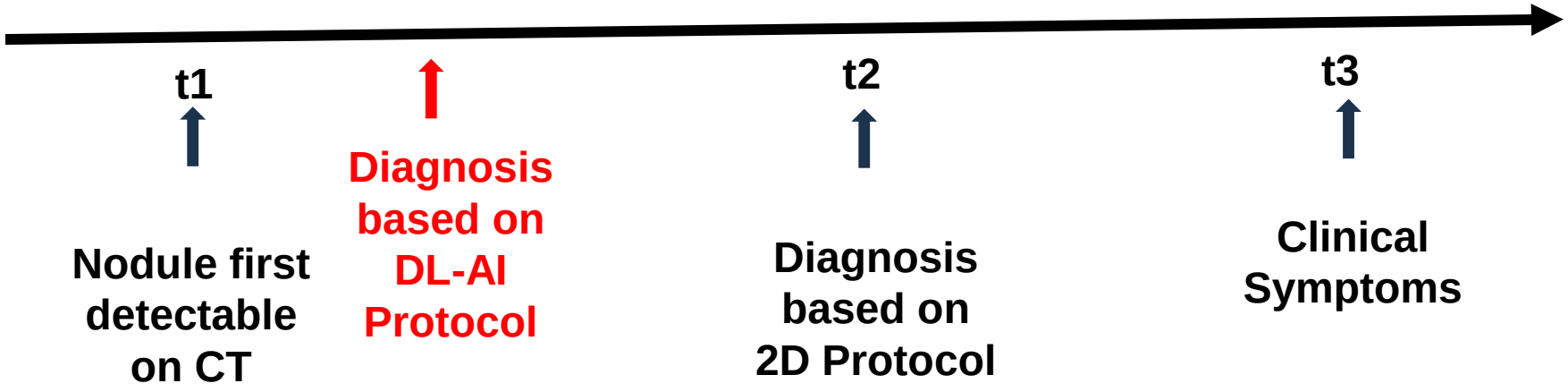
J Thorac Oncol. 2023 Aug 16:S1556-0864(23)00736-0.

Why is quantitative imaging of small lung nodules not widely used in clinical practice?

- CT departments generally do not have QA system in place to assess the performance of the software (the reproducibility/quality of volumetric measurements)
- No published data to show volumetrics result in stage shift or provide mortality reduction benefit over diameter measurements

Opportunity: Prospective Randomized Trial To Provide Evidence that AI Approach Improves Clinical Outcome

- Example



If AI recommends an earlier imaging study or biopsy for a more aggressive tumor, this benefit cannot be observed in retrospective study because the patient did not have a visit at this earlier time point, and it is unknown whether the patient already had lung cancer at that time.