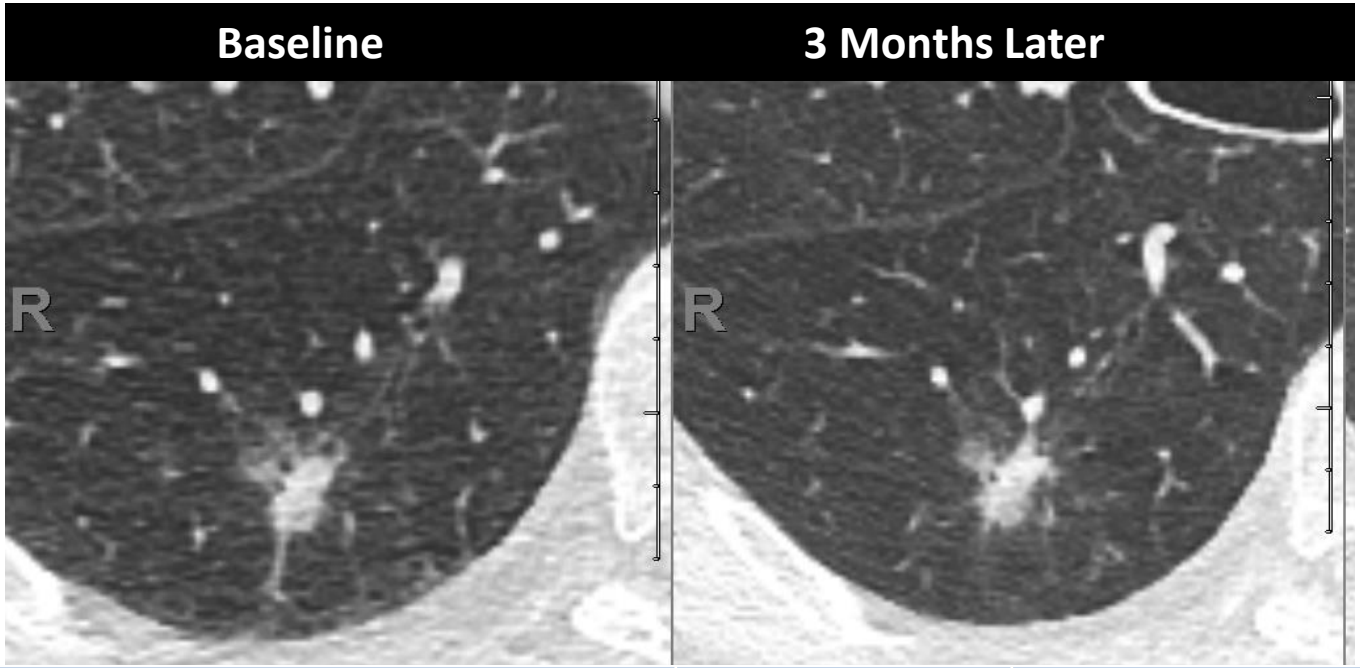
Improving CT Lung Cancer Screening Through Image Quality Optimization Panel Discussion

Stephen Lam MD, FRCPC

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

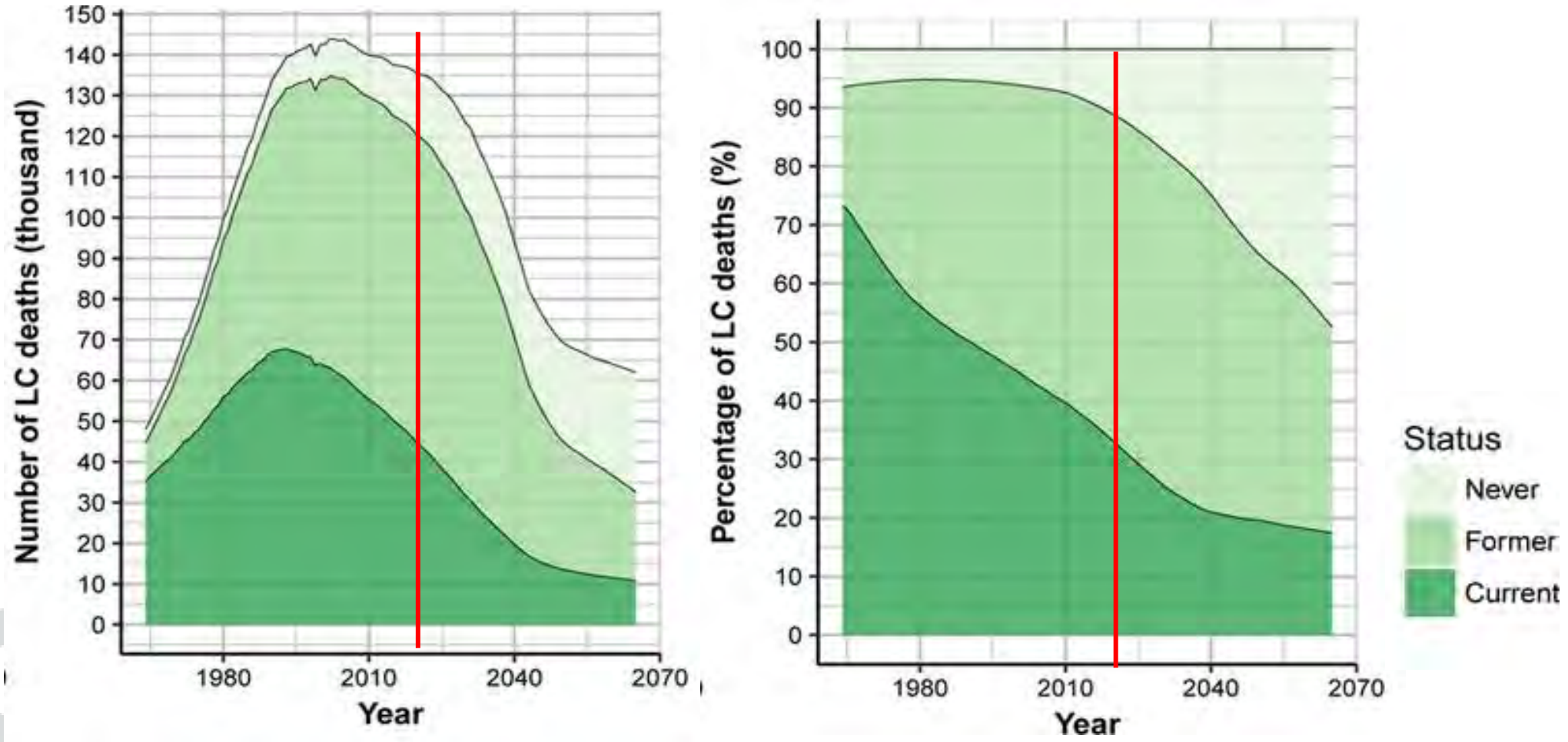
Example: Growth of Part-solid Nodule



	Baseline	3 Months
Total nodule, Mean Diameter, mm	17.2	19.0 (+1.8)
Solid Core, Maximal Diameter, mm	11.8	14.4 (+2.6)
Total nodule Volume, mm3 (VDT, days)	1754	2296 (288 days)
Solid Core Volume, mm3 (VDT, days)	215	305 (224 days)

Pathology:
Adenocarcinoma
IA2

Smoking and Lung Cancer Mortality in the US from 2015-2065



Ann Intern Med. 2018 November 20; 169(10): 684–693.

Lung Cancer In Never Smokers

- TALENT Study (Taiwan): T0 invasive lung cancer detection rate: 255/12,011= 2.1%, NLST: 1.1%, NELSON: 0.9%
- Non-solid nodules 47%, Part-solid nodules 34%, Solid nodules 19% (solid nodules predominate in smokers)
- Multiple primary lung cancer: 17.9%
- Different etiology: Non-tobacco smoke environmental exposures e.g. ambient air pollution

Personalized Screening

- Risk-based management of lung nodules
- Personalize screening interval to reduce unnecessary screens and reduce missed cancers
- Deep learning algorithms need to consider the effects of different exposures and genetics, never versus ever smokers
- Consistency in image acquisition and measurement as well as stability of image quality over time are critical especially for sub-solid nodules in terms of volume and density measurements, longer duration of follow-up for 5+ years