

# International Lung Screen Trial (ILST)

Sriyani Parsons – Research Officer, Eastern Clinical Research Unit, Monash University, Box Hill, VIC 3128, Australia  
 Dr Hayden Prime – Radiologist, I-MED Radiology Network, Epworth Eastern Hospital, Box Hill, VIC 3128, Australia  
 Dr Paul Fogarty – Respiratory Physician, Epworth HealthCare, Box Hill, VIC 3128, Australia



## Introduction

The ILST is an investigator-led global multi-site screening study which uses low dose computed tomography (LDCT) scans of the chest, to detect lung cancer in current or former smokers aged 55 to 80 years. The study aims to define the optimal selection criteria for screening and to evaluate a standardized system for lung nodule identification, classification and management.

The lead site is the University of Queensland at The Prince Charles Hospital, with 8 other sites in Australia, Canada, Hong Kong and the UK.

## Aims

Lung cancer is the leading cause of cancer death in both men and women, making up almost 25% of cancer deaths worldwide. CT lung screening can reduce lung cancer mortality in high risk individuals by detecting early asymptomatic disease. Previous studies have relied on age and smoking history to determine risk. This research aims to prospectively evaluate the sensitivity and specificity of two prediction models (i.e. PLCOm2012<sup>#</sup> vs USPSTF<sup>\*</sup>) to identify high risk individuals to improve the efficiency of lung cancer screening.

<sup>#</sup>PLCOm2012 = Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial Model

<sup>\*</sup>USPSTF = United States Preventive Services Task Force

## Methodology

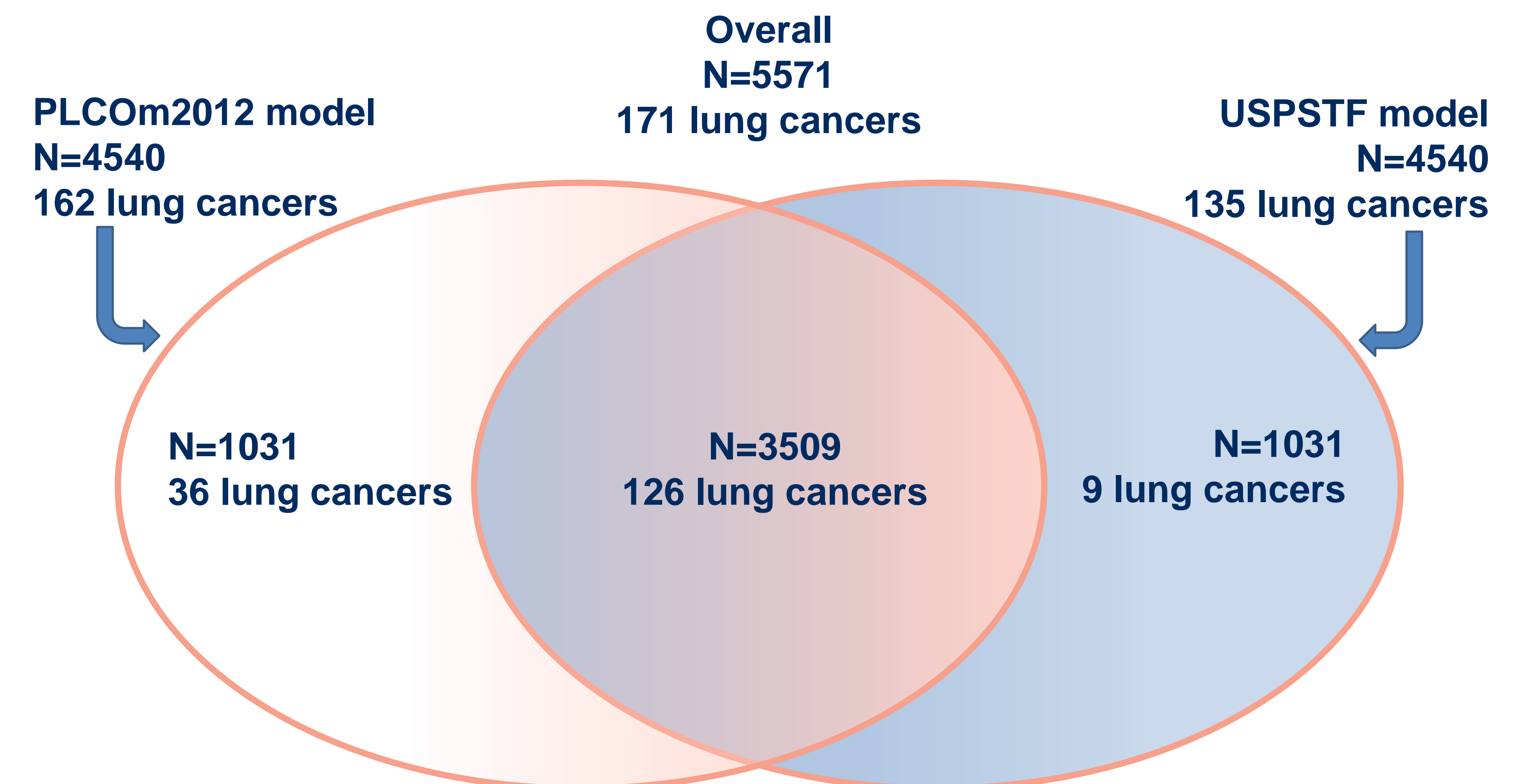
Table 1. Schedule of ILST assessments at Epworth HealthCare:

	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5
Low-dose CT (LDCT) scan of the chest	X		X			
Lung Function (Spirometry) Test	X					
Lung Health Questionnaire (LHQ)	X					
Quality of Life (QoL) Questionnaires	X	X	X	X	X	X
Annual Follow Up Questionnaire		X	X	X	X	X

A dedicated radiologist at each site interprets the CT scans at baseline and at Year 2. Lung nodules or masses identified are managed according to a standardized protocol coordinated through the participant's primary care physician with specialist involvement as appropriate. Incidental findings are also reported.

## Results

Figure 1. Distribution of ILST participants and lung cancer cases by PLCOm2012  $\geq 1.7\%/6y$  status vs USPSTF positivity:



Data source: Prospective comparison of USPSTF 2013 versus PLCOm2012 lung cancer screening eligibility criteria – International Lung Screen Trial (ILST) Results 29MAY2021, Tammemägi, V2.

177 lung cancers were diagnosed in the complete cohort of 5819 individuals. 6 cancers occurred in 248 who were outside both prediction models.  
 Histological types: AdenoCa 68.4%; Squamous cell 14.7%; Small cell 5.1%  
 Stage: Early stage (I, II) 80%; Late stage (III, IV) 20%  
 No difference in stage or histology between prediction models.

## Conclusions

Significantly more lung cancers (15.8%) were identified in individuals selected using the PLCOm2012 risk prediction model compared to the USPTF criteria, resulting in significantly more cumulative life expectancy. This outcome will inform decisions made regarding a Lung Cancer Screening Program currently under consideration by the Australian Federal Department of Health.

Global Research Team: Martin Carl Tammemägi; Mamta Ruparel; Alain Tremblay; Renelle Myers; John Mayo; John Yee; Sukhinder Atkar-Khattra; Ren Yuan; Sonya Cressman; John English; Eric Bedard; Paul MacEachern; Paul Burrows; Samantha L Quaife; Henry Marshall; Ian Yang; Rayleen Bowman; Linda Passmore; Annette McWilliams; Fraser Brims; Kuan Pin Lim; Lin Mo; Stephen Melsom; Bann Saffar; Mark Teh; Ramon Sheehan; Yijin Kuok; Renee Manser; Louis Irving; Daniel Steinfors; Mark McCusker; Diane Pascoe; Belinda Dresser; Emily Stone; David CL Lam; Ming-Yen Ng; Varut Vardhanabhati; Christine D Berg; Rayjean J Hung; Samuel M Janes; Kwun Fong; Stephen Lam