



Incidental Findings on LDCT Screens and Respiratory Disease Mortality in the NLST

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National Lung Screening Trial (NLST)

- ▶ ~54,000 high-risk current and former smokers randomized to LDCT or CXR arm
- ▶ Eligibility: Age 55-74, 30+ PKYRs, current smokers or quit within 15 years
- ▶ Enrolled 2002-2004
- ▶ 3 annual screens
- ▶ 12-year follow-up for mortality

Screening Abnormality Categories

- ▶ Non-calcified nodule/mass ≥ 4 mm (positive screen)
- ▶ Non-calcified nodule < 4 mm
- ▶ Benign lung nodule(s) (benign calcification)
- ▶ Atelectasis, segmental or greater
- ▶ Pleural thickening or effusion
- ▶ Non-calcified hilar/mediastinal adenopathy/mass ≥ 10 mm short axis
- ▶ Reticular/reticulonodular opacities, honeycombing, fibrosis, or scar
- ▶ Emphysema
- ▶ Consolidation

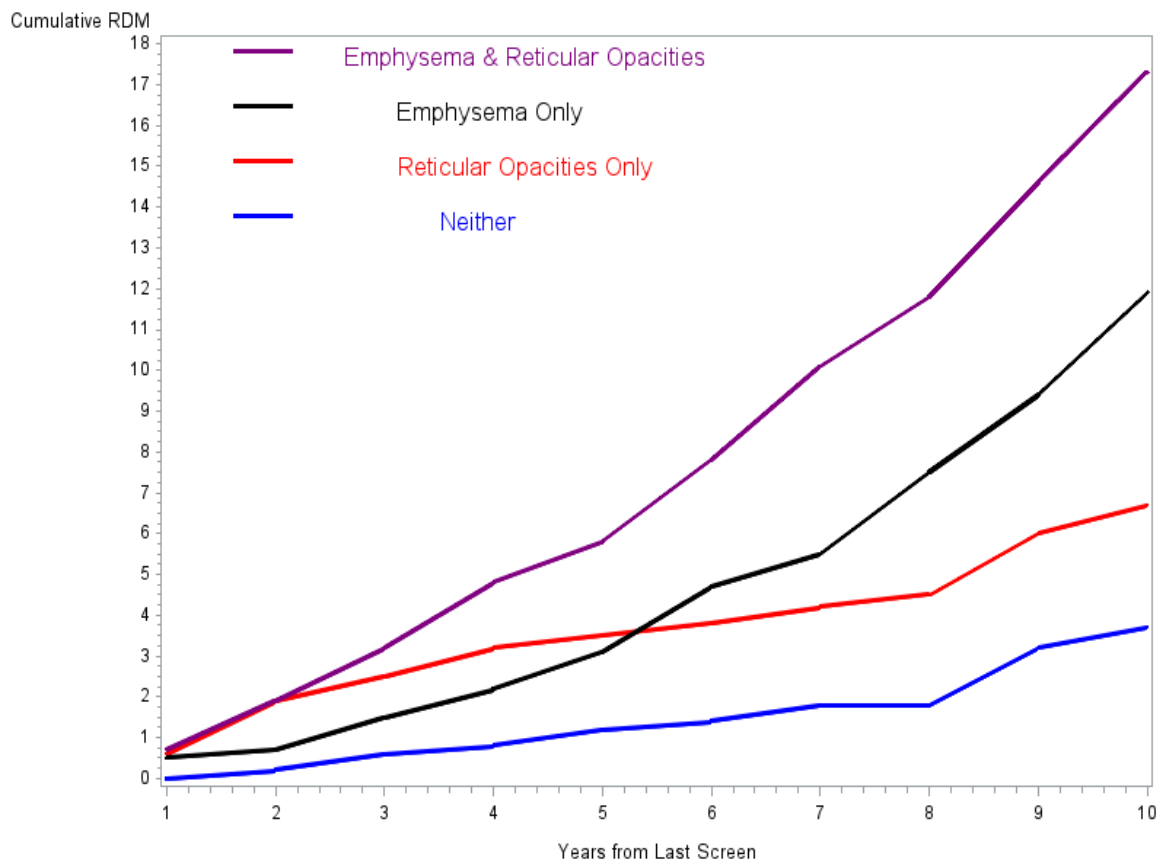
Analysis Cohort

- ▶ Eligibility: Baseline and 1+ subsequent LDCT screen
- ▶ Analysis Cohort: n=25,002 of 26,722 total LDCT arm subjects
- ▶ 74% age 55-64, 26% age 65-74; 59% male, 47% current smoker
- ▶ Non-Hispanic White 90%, AA 4%, Hispanic 2%, Asian 2%
- ▶ Emphysema or COPD (self report) - 10.6%
- ▶ COPD GOLD (assessed on subset) - 68% no obstruction, 8% level 3-4

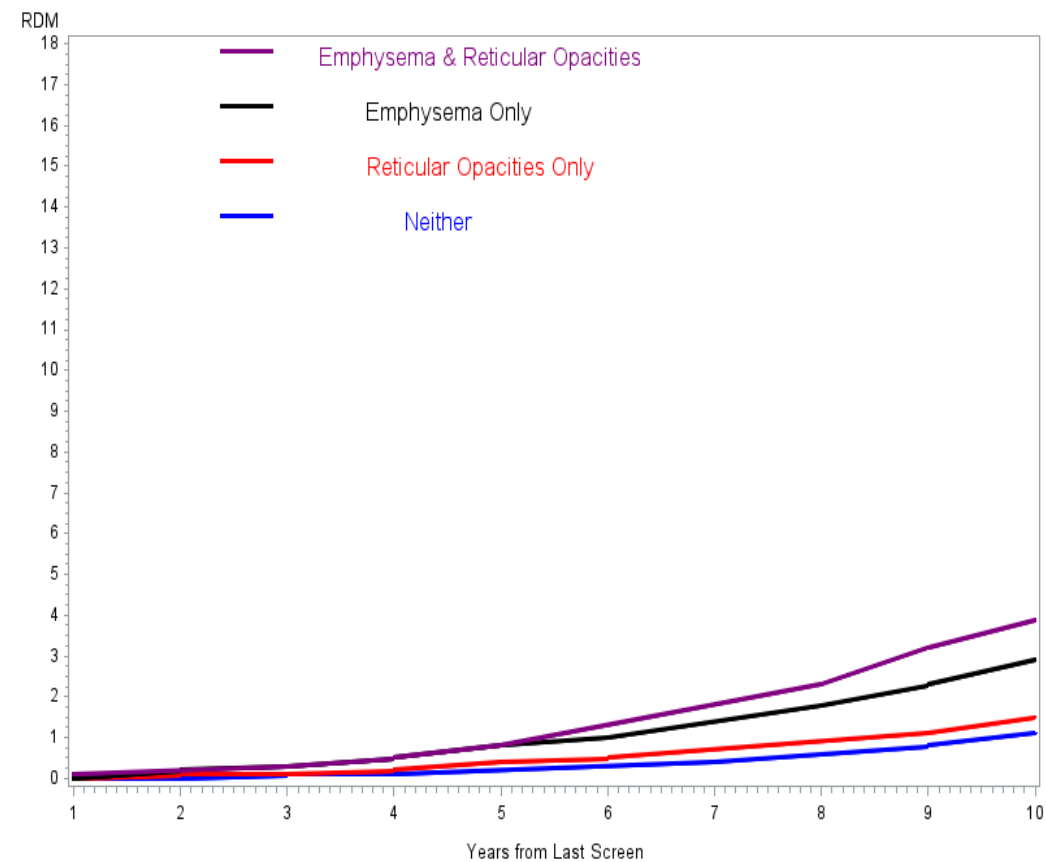
Respiratory-related Findings on LDCT Screens

Finding	Baseline Screen, N (%)	Any Screen, N (%)
Emphysema (all subjects)	7674 (30.7)	11059 (44.2)
Emphysema (emphysema/COPD self report, n=2,653)	1391 (52.4)	1785 (67.3)
Emphysema (no emphysema/COPD self report, n=22,349)	6283 (28.1)	9274 (41.5)
Reticular opacities, honeycombing, fibrosis	5035 (20.1)	9200 (36.8)
Pleural thickening or effusion	1397 (5.6)	2656 (10.6)
Hilar/mediastinal adenopathy or mass	414 (1.7)	758 (3.0)
Atelectasis	216 (0.9)	558 (2.2)
Consolidation	183 (0.7)	534 (2.1)

Cumulative Respiratory Disease Mortality



Self-reported COPD



No self-reported COPD

Proportional Hazards Model

	Respiratory Disease Mortality	All-Cause Mortality
Factor	HR (95% CI)	HR (95%)
LDCT Findings		
Emphysema	2.27 (1.92-2.70)	1.30 (1.22-1.40)
Pleural thickening/effusion	1.07 (0.86-1.32)	1.09 (0.99-1.20)
Reticular Opacities	1.39 (1.19-1.62)	1.12 (1.05-1.20)
Current Smoker	1.8 (1.5-2.1)	1.7 (1.6-1.8)
Pack-Years >50	1.6 (1.3-1.8)	1.4 (1.3-1.5)
Hx of COPD/emphysema	3.4 (2.9-4.0)	1.7 (1.5-1.8)
Age 65-69	2.0 (1.7-2.4)	1.8 (1.7-1.9)
Age 70+	4.0 (3.4-4.8)	3.3 (3.0-3.5)

Summary

- ▶ Emphysema reported on LDCT scans was relatively frequent in NLST
- ▶ Most subjects with emphysema on LDCT did not have prior COPD on self-report
- ▶ Emphysema on LDCT was associated with increased respiratory and all-cause mortality over the following decade, even after controlling for self-reported COPD, demographics and smoking status