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P1.049: Comorbidity Profile of Individuals Receiving Lung Cancer Screening in British Columbia, Canada

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No generative AI tools were used in the preparation of this poster.

INTRODUCTION

- Lung cancer screening with low-dose computed tomography (LDCT) can reduce mortality.
- However, studies have suggested that the net benefits of screening vary by comorbidity risk, with lower mortality reduction expected in those with high comorbidity levels.
- We evaluated the comorbidity profile and comorbidity risk levels of individuals enrolled in screening in British Columbia (BC), Canada.

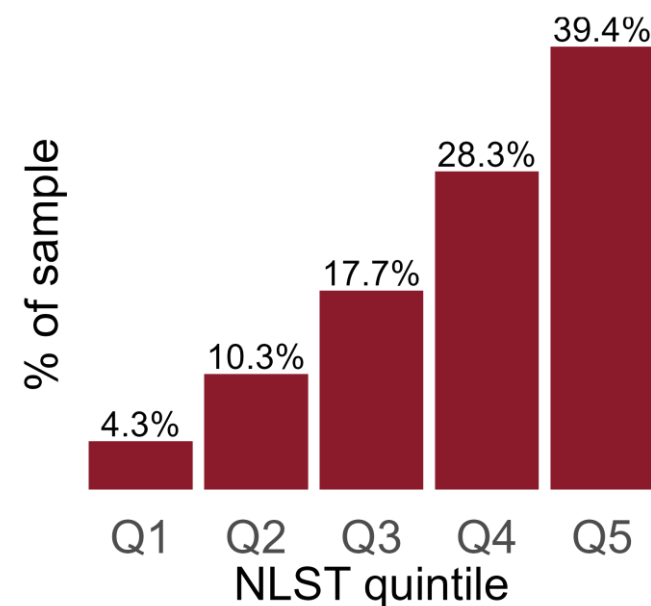
METHODS

- 18,683 individuals enrolled in the BC Lung Screening Program from 2022 to 2025.
- Information collected included demographic variables, smoking histories, and self-reported history of relevant comorbidities.
- Comorbidities analyzed included a history of cancer, chronic obstructive pulmonary disease (COPD), heart attack, stroke, hypertension, and diabetes.
- Calculated the recently developed Prostate, Lung, Colorectal, and Ovarian comorbidity index (PLCO-CI) to assess the risk levels in the BC screening population.
- Compared the characteristics of individuals in five comorbidity levels based on PLCO-CI quintiles in the United States (US) National Lung Screening Trial (NLST) population.

RESULTS

- 17% of the sample reported a history of cancer, 34% COPD, 6.8% heart attack, 4.6% stroke, 39% hypertension, and 14% diabetes.
- The median PLCO-CI score was 4.19 (Q1:3.83-Q3:4.66).
- PLCO-CI risks were higher than those seen in the NLST trial.

NLST quintile	PLCO-CI range
Q1	≤ 3.39
Q2	3.40–3.66
Q3	3.67–3.94
Q4	3.95–4.33
Q5	> 4.33



	Q1 (≤ 3.39) n = 803 ¹	Q2 (3.40–3.66) n = 1,931 ¹	Q3 (3.67–3.94) n = 3,303 ¹	Q4 (3.95–4.33) n = 5,285 ¹	Q5 (> 4.33) n = 7,361 ¹	P ²
Age	58.0 (56.0–60.0)	60.0 (58.0–63.0)	63.0 (60.0–66.0)	66.0 (63.0–69.0)	69.0 (66.0–72.0)	<0.001
Male Sex	156 (19%)	722 (37%)	1,501 (45%)	2,890 (55%)	5,130 (70%)	<0.001
Body Mass Index, (kg/m ²)	25.0 (22.0–29.0)	26.0 (23.0–29.0)	26.0 (23.0–29.0)	26.0 (23.0–30.0)	27.0 (24.0–30.0)	<0.001
Currently Smokes	487 (61%)	1,177 (61%)	1,877 (57%)	2,888 (55%)	4,311 (59%)	<0.001
Smoking Duration	34 (± 7)	37 (± 7)	39 (± 7)	42 (± 7)	47 (± 8)	<0.001
Cigarettes Per Day	22 (± 8)	21 (± 8)	21 (± 8)	20 (± 8)	21 (± 8)	<0.001
Years Since Quit	4 (± 8)	4 (± 8)	5 (± 8)	5 (± 8)	4 (± 7)	<0.001
Race						<0.001
Indigenous (First Nations/Metis/Inuit)	139 (17%)	212 (11%)	282 (8.5%)	356 (6.7%)	442 (6.0%)	
Education						<0.001
Less than high school	133 (17%)	318 (16%)	538 (16%)	1,020 (19%)	1,712 (23%)	
High school graduate	283 (35%)	646 (33%)	1,117 (34%)	1,730 (33%)	2,432 (33%)	
Technical/vocational school certificate	91 (11%)	231 (12%)	451 (14%)	711 (13%)	918 (12%)	
Some college/university	193 (24%)	467 (24%)	747 (23%)	1,067 (20%)	1,364 (19%)	
University graduate	71 (8.8%)	184 (9.5%)	309 (9.4%)	516 (9.8%)	634 (8.6%)	
Postgraduate/professional degree	32 (4.0%)	85 (4.4%)	141 (4.3%)	241 (4.6%)	301 (4.1%)	
Family History of Lung Cancer	366 (46%)	632 (33%)	885 (27%)	1,316 (25%)	1,515 (21%)	<0.001
Cancer History	82 (10%)	220 (11%)	465 (14%)	865 (16%)	1,468 (20%)	<0.001
Chronic Obstructive Pulmonary Disease	26 (3.2%)	191 (9.9%)	666 (20%)	1,624 (31%)	3,858 (52%)	<0.001
Heart Attack	0 (0%)	0 (0%)	10 (0.3%)	99 (1.9%)	1,152 (16%)	<0.001
Stroke	0 (0%)	5 (0.3%)	19 (0.6%)	96 (1.8%)	728 (10.0%)	<0.001
Hypertension	27 (3.4%)	203 (11%)	739 (23%)	1,847 (35%)	4,357 (60%)	<0.001
Diabetes	4 (0.5%)	44 (2.3%)	172 (5.2%)	538 (10%)	1,776 (24%)	<0.001
Lung Cancer Diagnoses (confirmed)	18 (2.2%)	29 (1.5%)	46 (1.4%)	105 (2.0%)	226 (3.1%)	<0.001

¹ Median (Q1–Q3); n (%); Mean ($\pm$ SD)

² Kruskal-Wallis rank sum test; Pearson's Chi-squared test

People in NLSTQ5 PLCO-CI range:

- More male
- Longer smoking duration
- Higher levels of comorbidities
 - Cancer history
 - COPD
 - Heart attack
 - Stroke
 - Hypertension
 - Diabetes

DISCUSSION AND CONCLUSION

- Comorbidity levels and risk of individuals receiving screening in BC are higher than those of the NLST population.
- This is not unexpected since eligibility is based on lung cancer risk level, which correlates with comorbidity risk.
- The high proportion of screening program participants in the highest comorbidity level is concerning, given that recent analyses found no reduction in lung cancer mortality from screening in the NLST among those in the PLCO-CI NLSTQ5 group.
- The results highlight the need to frequently monitor the status and outcomes of these individuals and provide additional support and health counseling (e.g., smoking cessation) to maximize the benefits of screening and improve overall impact.

Limitations

- Self-report comorbidity data
- PLCO-CI model has not been validated in non-NLST populations

Future work

- Assess screening outcomes by PLCO-CI level
- Validate the PLCO-CI score and other comorbidity models to predict non-lung cancer mortality

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