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# WHAT DOES IT TAKE TO CATCH AN EARLY STAGE LUNG CANCER IN CANADA?

Sonya Cressman, Ian Cromwell,  
Stuart Peacock

*Health Economists*

# Objectives

- Introduce the early detection of lung cancer, health economics and the pan-Canadian study
- Present the estimated interim costs of screening from prospectively-collected, resource utilization data
- Introduce the CRMM simulation model that may be used to project cost-effectiveness

# Lung Cancer Screening Past and Present

- CXR trials show no significant mortality benefit
- National Lung Screening Trial (NLST) shows a 20% mortality reduction for CT-screening of smokers over CXR<sup>1</sup>
- Pan-Canadian protocol
  - risk prediction
  - bronchoscopy
  - follow-up protocol
  - 8 study centres, **single arm trial, endpoint=lung cancer diagnoses**

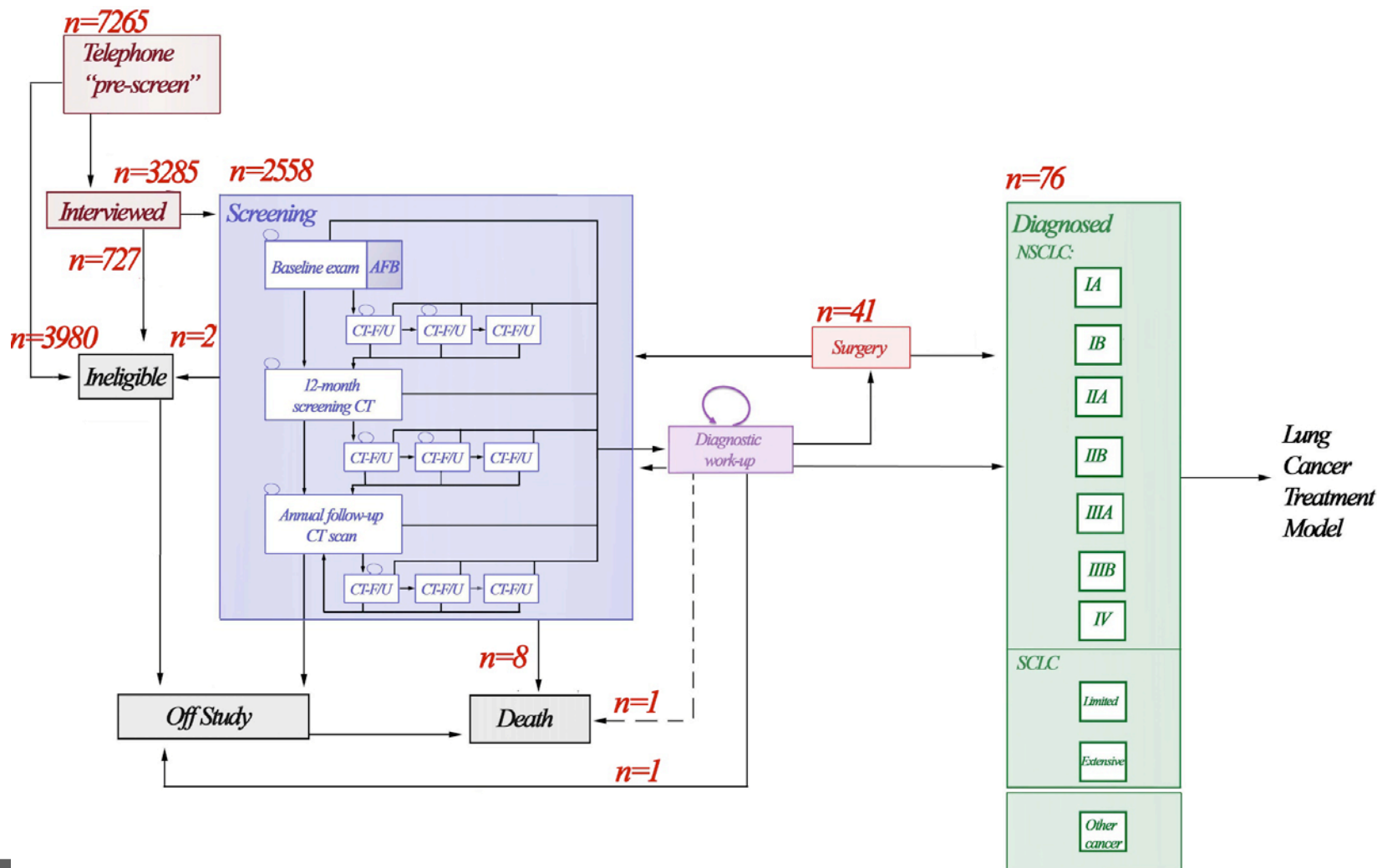
# The incremental cost-effectiveness ratio

$$\text{ICER} = \frac{(\text{costs of new treatment}) - (\text{costs of old treatment})}{(\text{life years new treatment}) - (\text{life years old treatment})}$$

Single arm trial .: no comparator,  
Endpoint of diagnosed lung cancer .: no life years

**Thank goodness for the  
NLST and simulation models**

# The pan-Canadian Early Detection Strategy (2.3 years in)

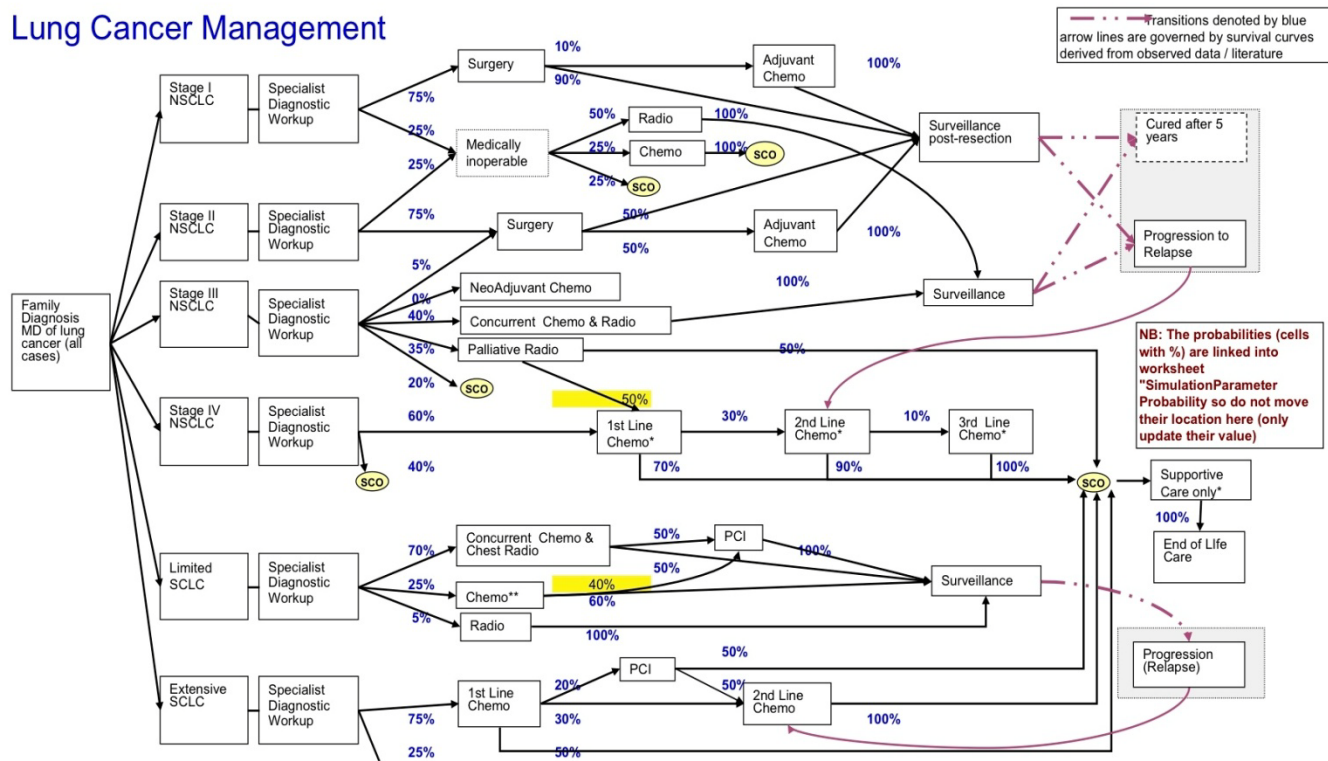


# CPAC's CRMM Lung Cancer Simulation Model (www.cancerview.ca)

Lung Cancer Management Data CRMM1215.xls

Diagram

## Lung Cancer Management



# Screening Costs (no cancer diagnosed) 2.3 years in

Resource	Physical Unit	Unit Costs	Resource Unit total
Telephone interview	7,265	\$2.00	\$14,530
Clinic interview	3,285	\$6.00	\$19,710
Screening CT scans	4,408	\$160.00	\$705,280
Screening Bronchoscopy	<b>1206</b>	<b>\$700.00</b>	<b>\$845,282</b>
Screening spirometry	3,660	\$15.00	\$5,990
Diagnostic workup	176	PET(\$1,500)- CXR(\$60)	\$83,417
Surgery	6	\$14,730	\$90,252
PER-PERSON SCREENING COST			<b>\$731</b>

# Estimated program costs for the NLST

Scenario	Estimated per patient lung cancer treatment costs <sup>2</sup>						Screening Costs
	Non-Small Cell Lung Cancer (% lung cancers detected)				Small Cell Lung Cancer (% lung cancers detected)		Screening (n)
	Stage I	Stage II	Stage III	Stage IV	Limited	Extensive	
NLST-CT	\$11,484 (49.1%)	\$10,990(6.3%)	\$4,962(17.2%)	\$2,715(14.4%)	\$7,007(3.9%)	\$960(6.0%)	\$ 120,020,160 (60,101)

<sup>2</sup>Evans et al, Oncology 1995

# Simulation of cost effectiveness scenarios- based on “perfect-all true positive” NLST data

NLST arm	Total screening and cancer costs	Person years	ICER (CT:CXR, cost in 2010(\$)/person-years gained)	ICER (CT:UNSCREENED, cost in 2010(\$)/person-years gained)
CT	\$33,081,300	144,103	\$14,454	\$23,888
CXR	\$22,457,521	143,368	Comparator	-
UNSCREENED (CRMM simulated)	\$15,23560	143,368*	-	Comparator

\*ASSUMING CXR and unscreened benefits are equivalent and that screening does not occur in the unscreened arm\*\*

\*\*We can model anything, with assumptions


# Just how much does it cost?

- Screening costs (including false positives, SAEs, impute missing data)
- Societal costs
- Gains from smoking cessation?
- Can we model that? YES!
  - Of course, we can model anything.

# Policy implications

- Given the evidence of mortality reduction in the NLST, lung cancer screening by CT could save thousands of lives in Canada
  - An estimated 1246 lung cancer deaths/year
- Models for determining cost-effectiveness must allow for probabilistic uncertainty analysis of many different parameters
- And finally, *just how much does a CT scan cost anyway?*

# CT screening exam for smokers: NOW AVAILABLE for only \$500



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Though it is the most preventable of all cancers, lung cancer remains the leading cause of cancer death for both men and women. It kills more than 180,000 North Americans each year – more than prostate, colon, and breast cancer combined.

### THE LUNG SCAN: THE BEST DEFENCE IS A GOOD OFFENCE


After quitting smoking, early detection may be your best defence against lung cancer. Researchers have recently demonstrated that routine CT screening reveals most lung cancers while they are potentially curable.

The Lung Scan is very accurate in detecting small lung cancers before they become symptomatic or before they become visible on standard chest X-rays. Early detection of lung cancers can mean a longer life and, in many cases, a cure.

### IS IT FOR YOU?

If you are or have been a smoker, regular screening is doubly important. Studies suggest individuals with a history of heavy smoking or exposure to second-hand smoke should consider CT screening for lung cancer starting at age 50.

For more information about procedures, pricing or scheduling availability [contact us](#).



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