Health and Economic Impacts of Organized vs Opportunistic Lung Cancer Screening in Canada

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Conflict of interest: None; Abstract presented before: N
**Health Impacts**

**Opportunistic Screening**
- 40-84 yr-olds; 20 pk-yr; annual scans
- Incidence: 31,000
- Mortality: 23,000

**Organized Screening**
- 55-74 yr-olds; 30 pk-yr; 3 scans only
- Incidence: 29,000
- Mortality: 24,000

**Cumulative number of cases, 2016–2036**

**Health System Impact**

**Average Annual Scans, 2016-2036**
- Total: 877,000

**Cumulative Diagnostic Procedures, 2016-2036**
- Total: 3,500,000
- Non-invasive: 3,247,000
- Invasive (+ve and -ve tests): 187,000
- Invasive (false +ves): 66,000
- Non-invasive: 599,000
- Invasive (+ve and -ve tests): 35,000
- Invasive (false +ves): 12,000

**Lung Scans**
- 112,000
Average Annual Costs 2016-2036 and Cost-Effectiveness, Lifetime (2016 CAD)

Opportunistic Screening
40-84 yr-olds; 20 pk-yr; annual scans

- Screening: $270 mil (27%)
- Treatment: $729 mil (73%)

Total cost: $999 million
ICER = $71,740/QALY
($\Delta \text{cost}/\Delta \text{QALY}, 3\% \text{ discount rate})

Organized Screening
55-74 yr-olds; 30 pk-yr; 3 scans only

- Screening: $44 mil (6%)
- Treatment: $700 mil (94%)

Total cost: $744 million
ICER = $61,340/QALY
($\Delta \text{cost}/\Delta \text{QALY}, 3\% \text{ discount rate})
Conclusion:
Over 20 years in Canada, incidence and mortality impacts would be similar, but organized screening would be more cost-effective and would generate fewer harms and unnecessary healthcare utilization than opportunistic screening.

The OncoSim model (formerly the Cancer Risk Management Model), version 2.3, is made possible by Health Canada through funding to the Canadian Partnership Against Cancer.