

BACKGROUND

NATIONAL LUNG CANCER EARLY DETECTION STUDY

The Terry Fox Research Institute and the Canadian Partnership Against Cancer launched the National Lung Cancer Early Detection Study in September 2008.

Lung cancer is the leading cause of cancer death in Canada and around the world, killing 1.2 million people each year (20,200 in Canada) – more than that of colorectal, breast and prostate cancers combined. By 2020, it is projected that lung cancer will be the fifth highest killer among all cancer and non-cancer diseases.*

Currently, only 16% of lung cancer patients survive five years or more because most people are diagnosed too late, when they present with symptoms. If lung cancer is diagnosed and treated before it spreads, the five-year survival is over 70%. Early detection and treatment of lung cancer is the most promising strategy to reduce lung cancer mortality.**

The early lung cancer detection study is a made-in-Canada approach that investigates how emerging technologies can improve early detection of lung cancer.

About the Study

In concept, the study is simple – an easy-to-administer, low-cost measure (a questionnaire and tests of blood and breath) is applied to all individuals to identify those at higher risk. Then more expensive and sensitive tests, such as bronchoscopy (a procedure that uses a tube to examine inside a patient's throat) and spiral CT scan (using a rotating imaging machine) are applied only to those higher risk individuals.

The project will screen 2,500 current and former smokers between 50 to 75 years of age at high risk of lung cancer. Seven major centres from coast to coast will take part in the study.

The study will:

- Use a population-based lung cancer risk prediction survey to estimate the level of risk. In addition to age, smoking and occupational exposure, additional information that can be readily and inexpensively obtained, such as a family history of lung cancer, body height and weight and history of chronic obstructive pulmonary disease will be used to predict lung cancer risk more accurately;

- Investigate the use of blood-based biomarkers (which measure the progress of a disease) to identify those at risk;
- Use a combination of spiral CT scan and autofluorescence bronchoscopy to comb the large bronchial tubes, small air passages and lung tissue for signs of early lung cancer. These new technologies can pick out tiny cancers that were not visible in previous tests;
- Track the type of diagnostic tests and treatment as well as their costs to determine the health care resources required and how much it would cost the public if a lung cancer screening program were to be implemented in Canada; and
- Evaluate the impact of the screening tests on the participants' quality of life.

Benefits of the Study

The primary study objective is to find out who could most benefit from spiral CT scanning, if concurrent international studies show it to be effective in reducing mortality, and to examine how the combination of tests could maximize the impact of lung cancer screening as quickly as possible in Canada.

The project brings together top Canadian experts in radiology, respiratory medicine, thoracic surgery, pathology, oncology, epidemiology, health economics and health care policy, and will build a Canada-wide community of lung cancer specialists to support the roll-out of the world's first cost-effective lung cancer detection program, should policy makers choose to adopt this approach.

The approach is of particular interest in Canada because its practical, low-cost approach can be adopted in a public health care setting. However, the innovative study methodology, which has been subject to international peer review, has also already garnered significant international research community interest. The study will also leverage the results of two large randomized trials currently underway in the United States and Europe comparing spiral CT with chest x-ray or no screening, to help determine whether spiral CT screening saves lives.

For more information, visit TFRI and Canadian Partnership Against Cancer: www.tfri.ca or www.partnershipagainstcancer.ca

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**Canadian Cancer Statistics 2008*, Canadian Cancer Society

** Murray CJ, Lopez AD. Alternative projections of mortality and disability by cause 1990-2020: Global Burden of Disease Study. *Lancet* 1997: 1498-504.

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