

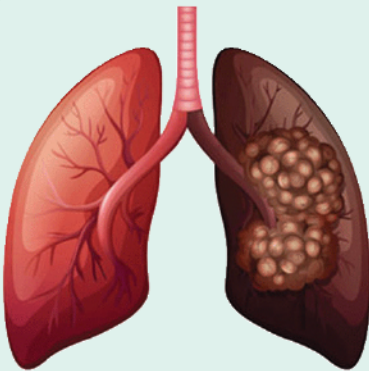
# Low Dose CT Lung Screen



## What is lung cancer?

Lung cancer occurs when the cells in the lungs grow and divide out of control. It can happen without any signs or symptoms and therefore, it remains undetected until the cancer has reached advanced stages in some cases.

In Singapore, lung cancer is the second and third most common cancer in men and women respectively<sup>1</sup>. Between 2010 and 2014, statistics showed that 15.1% of all cancer in men were lung cancer and for women, the figure is 7.6%<sup>2</sup>. Most people diagnosed with lung cancer are above 40 years old<sup>2</sup>.



Cancer cells in lungs

## What are the risk factors of lung cancer?

- Smoking
- Second hand cigarette smoke (passive smoking)
- Exposure to chemicals such as asbestos, coal gas, chromium, nickel, arsenic, vinyl chloride and mustard gas
- Personal or family history of lung cancer

**With low dose CT Lung Screen, lung cancer can be detected in the early stage of the disease**

## What is low dose CT Lung Screen?

Computed tomography (CT) scan is a computerised X-ray examination which produces cross-sectional images of the internal structures of our body. A low dose CT Lung Screen is an examination of one's lungs, which has much lower radiation dose than a conventional CT scan.

With low dose CT Lung Screen, small lung nodules can be detected as the scan obtains hundreds of detailed images of the lungs. The aim is to diagnose lung cancer at a very early stage when the success rate of treatment is the highest.



Tiny lung nodules can be seen in CT Lung screen as it acquires hundreds of thin slices of the lungs.

## Who should have low dose CT Lung Screen?

Screening is generally beneficial to those who are at the greatest risk of lung cancer, including:

- Adults (aged 55 years and older) who have smoked heavily for many years (at least 1 pack of cigarettes per day for 30 years or more).
- People who smoked heavily for a long time but quit within the past 15 years.
- People with a history of lung cancer, or other risk factors of lung cancer as described earlier.

You should discuss with your doctor about your risk of lung cancer and your need for a CT Lung Screen.

## How should I prepare for the examination?

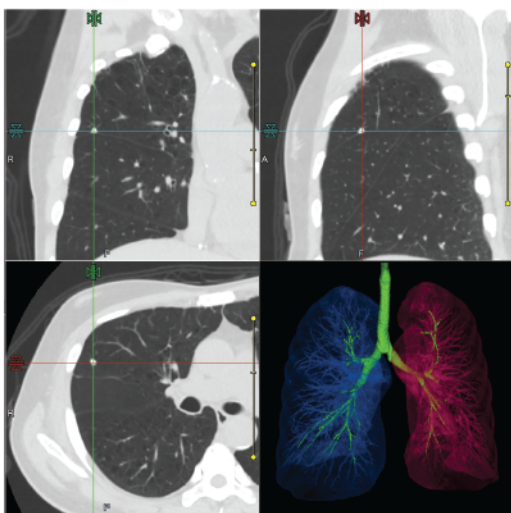
- There is no preparation needed for the scan.
- Women should always inform their doctor, nurse or radiographer if there is any possibility that they are pregnant.

## What happens during the examination?

- You will be asked to remove any metal you may be wearing.
- You will be positioned lying down on a padded table and moved into the scanner.
- The radiographer will be able to see and hear you at all times.
- You will be asked to hold your breath a few times during the scan. It is important to follow the breathing instructions so that the images are free from breathing motion.

## How long will it take?

The examination will only take about 5 to 10 minutes on the scan table.



CT Lung screen enables small lesions to be visualised in multiplanar view.

# What are the benefits and risks?

## BENEFITS

- CT scan is fast, painless and non-invasive.
- Low dose CT Lung Screen produces images of diagnostic quality that enable the detection of small lung nodules.
- Low dose CT Lung Screen has much lower radiation dose than a conventional CT scan.
- Lung cancer detected by screening is often at an earlier stage of disease, with better chance of cure with treatment.
- Lung cancer screening with low dose CT has been proven to reduce the number of deaths from lung cancer in high-risk patients, compared to chest X-ray<sup>3</sup>.

## RISKS

- Abnormal findings may require additional non-invasive tests or invasive procedures to confirm the diagnosis
- False alarms may occur when the CT scan result appears to be abnormal but no lung cancer is found i.e. false positive result.
- Lung cancer can be obscured or missed on the CT scan i.e. false negative result.
- There is a theoretical small risk of cancer from the exposure to radiation. However, the effective dose is small and to date, there is no evidence of genetically heritable risk in humans from exposure to X-rays during medical examinations<sup>4</sup>.

## Is there any other alternative examination to low dose CT Lung Screen?

An alternative to low dose CT Lung Screen is chest X-ray, however it may not be able to detect tiny lung nodules as it only takes a single projection of the lungs.

## REFERENCES

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2. <https://www.singaporecancersociety.org.sg/learn-about-cancer/types-ofcancer/lung-cancer.html#signs-symptoms>
3. The National Lung Screening Trial Research Team. (2011) Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening, *New England Journal of Medicine*, 365(5), 395-409. [Online]. DOI:10.1056/nejmoa1102873
4. <https://www.fda.gov/Radiation-EmittingProductsRadiationEmittingProductsandProcedures/MedicalImaging/MedicalX-Rays/ucm115329.htm>



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