

## WHAT ARE THE POTENTIAL SIDE EFFECTS?

You will experience minimal side effects in the first one to two weeks after your radiation therapy session. Many of these side effects will improve over time and some can be controlled with medication. Inform your doctor or nurse if you are experiencing any discomfort so they can help you better.

### Short-term side effects:

- Tiredness
- Cough
- Blood in phlegm
- Shortness of breath
- Difficulty swallowing
- Pain on swallowing

### Long-term side effects:

- Difficulty swallowing
- Persistent cough from lung inflammation



## CARING FOR YOURSELF DURING AND AFTER RADIATION THERAPY

- Be careful caring for the affected area  
Avoid hot or cold packs and only use lotions and ointments after checking with your doctor or nurse. Clean the affected area with lukewarm water and mild soap.
- Rest well  
Get plenty of rest during treatment.
- Check your medications  
Inform your doctor if you are taking medications, to make sure that they are safe to use during radiation therapy.
- Stop smoking  
Immediate benefits of less airway irritation with less cough and shortness of breath.
- Eat well  
Makes you feel better, have less side effects and allows you to fight infections better.
- Stay active (even gentle short bouts of activity helps!)  
Improves mood, reduces fatigue and helps with appetite.
- Enlist support  
Mental and emotional health is as important as physical health. It might be helpful to talk to counsellors or join a cancer support group.
- Have a caregiver who can manage your care  
It is good to have someone who can help to keep track of hospital appointments and medications prescribed.

### Informed Consent

Informed consent is an important process before the start of radiation therapy. Your doctor will explain to you the benefits and risks of the recommended therapy in detail during consultation, before the initiation of the treatment.

*Information in this brochure is given as a guide only and does not replace medical advice from your doctor. Please seek advice from your doctor if you have any questions related to the treatment, your health or medical condition.*

## CONTACT INFORMATION



### Nearest MRT Station: Kent Ridge Station (Circle Line)

Commuters can alight at the Kent Ridge Station, right at the doorstep of the NUH Medical Centre. Please exit the station via Exit C. NCIS is located on levels 8, 9 and 10 which are accessible via Lift Lobby B.

### National University Cancer Institute, Singapore (NCIS) Radiation Therapy Centre (RTC)

NUH Medical Centre, Level 8  
Opening Hours : 8.30am – 5.30pm  
(Mon – Fri, except Public Holidays)  
Appointment Line : (65) 6773 7888  
(8.30am – 5.30pm, Mon – Fri, except Public Holidays)  
Email : CancerApptLine@nuhs.edu.sg

### For all other general enquiries

National University Cancer Institute, Singapore (NCIS)  
Email : ncis@nuhs.edu.sg  
Website : www.ncis.com.sg



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5 Lower Kent Ridge Road, Singapore 119074  
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Website: www.nuh.com.sg

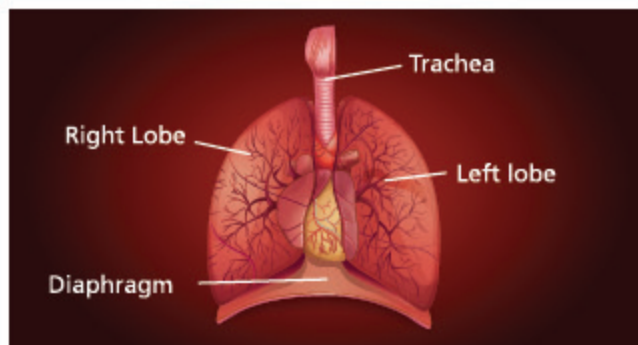
## Radiation Therapy for LUNG CANCER





## WHAT IS LUNG CANCER?

Lung cancer happens when the cells lining the airways grow and divide uncontrollably, leading to the formation of an abnormal mass. There are two major types of lung cancer: small cell lung cancer and non-small cell lung cancer. About 85% to 90% of lung cancers are non-small cell lung cancers. Non-small cell lung cancer is further subdivided into adenocarcinomas and squamous cell cancers. There is a rising incidence of adenocarcinomas in the non-smoking population while the incidence of smoking associated squamous cancers are getting less common.



## WHAT ARE THE SIGNS AND SYMPTOMS?

- Persistent cough
- Shortness of breath
- Chest pain
- Coughing up blood
- Recurring chest infection
- Hoarseness
- New onset of wheezing
- Loss of weight
- Loss of appetite

## HOW IS LUNG CANCER DIAGNOSED?

- Chest X-ray, CT Scan, PET Scan
- Lung biopsy (a sample of cells taken from the tumour)

## WHAT ARE THE DIFFERENT TYPES OF TREATMENT?

Treatment depends on the type of lung cancer and the stage of cancer, as well as the general medical condition of the patient.

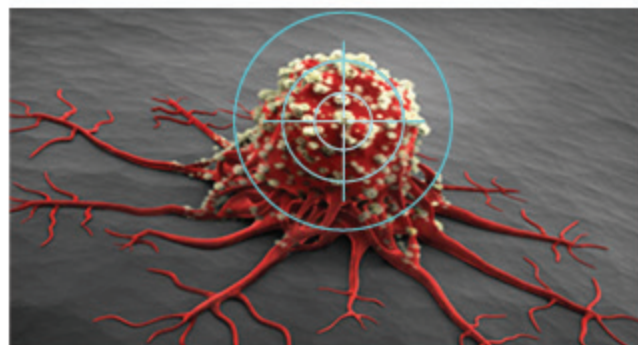
Surgery involves removing part of the lung containing cancer, and is mainly used for early stage non-small cell lung cancer.

Chemotherapy is the use of drugs in the treatment of non-small cell lung cancer and may also be given in advanced stages to control the spread of the cancer. It can also be used in combination with surgery and radiation therapy to improve chances of cure.

Radiation Therapy is the use of targeted X-rays to treat cancer. It can be used in early-stage patients or in advanced disease which cannot be operated on. Radiation therapy can also be used to reduce local symptoms like pain, bleeding, obstruction or cough.

## WHAT IS RADIATION THERAPY?

Radiation therapy treats cancer by using high-energy



X-rays generated from a radiation therapy machine to destroy the cancer cells. It inhibits cancer cells from multiplying by delivering ionising radiation to destroy cancer cells whilst minimising radiation to normal tissues. When these cancer cells die, the body naturally eliminates them. Healthy tissue is then able to repair itself in a way cancer cells cannot, and this leads to a much higher proportion of tumour cell death compared to normal cells.

## HOW IS RADIATION THERAPY DONE?

1. **Consultation:** The Radiation Oncologist determines the most appropriate method and discusses with you the treatment intent, schedule, risks and side-effects.
2. **Mark-Up and Simulation:** A CT scan of the treatment area will be obtained, while three small full-stop size marks are made to ensure accurate positioning during your daily treatment.
3. **Treatment Planning:** A multidisciplinary team produces a customised treatment plan for you.
4. **Treatment:**

<u>Non-Stereotactic Radiation Therapy:</u> Treatment is done daily (Mondays to Fridays) and takes 10 to 15 minutes per session. Treatment duration is individualised and can last one to seven weeks.	<u>Stereotactic Radiation Therapy:</u> Treatment is done once every two to three days and involves three to five sessions over one to two weeks. Each session can take between 30 to 60 minutes.
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5. **Follow-up:** Your first follow-up appointment varies depending on how you do during treatment, and is usually about one to six weeks after you have completed the course of radiation therapy.



## WHAT ARE THE TYPES OF RADIATION THERAPY AVAILABLE FOR LUNG CANCER?

- **3-Dimensional Conformal Radiation Therapy (3DCRT)**  
3DCRT delivers very precise doses of radiation to the lung and spares surrounding normal tissue through a machine called a linear accelerator.
- **Intensity Modulated Radiation Therapy (IMRT)**  
IMRT involves varying (or modulating) the intensity of the radiation being delivered during treatment. Compared to 3DCRT, this technique can deliver more tightly focused radiation beams to cancerous tumours while reducing the amount of radiation to surrounding healthy tissues.
- **Stereotactic Ablative Body Radiation Therapy (SABR) / Stereotactic Body Radiation Therapy (SBRT)**  
SABR and SBRT make use of precise positioning, immobilisation devices and multiple treatment beams delivered in different planes to achieve highly focused radiation therapy targeting suitable tumours. This allows larger radiation doses to be delivered during each treatment, thereby shortening the treatment duration and improving effectiveness without compromising safety.