INTRODUCTION

This booklet serves as a guide and covers information on radiation treatment, its procedures and general side effects during treatment. It also offers recommendations on how patients can manage their health during and after treatment. As each patient’s condition is unique, individual treatment experiences may vary. Please discuss with your doctor, nurses and radiation therapists for any concerns.

FAST FACTS ABOUT RADIATION TREATMENT

- Treatments are scheduled every day (except Saturday and Sunday), usually on an outpatient basis.
- Please allow 15 to 30 minutes for each treatment session although the treatment itself takes only a few minutes.
- It is important to get plenty of rest and to eat a well-balanced diet during the course of radiation treatment.
- Skin in the treated area may become sensitive and easily irritated.
- External radiation treatment does not make the patient radioactive. Side effects of radiation treatment are usually temporary; they vary depending on the area of the body that is being treated.

WHAT HAPPENS WHEN I FIRST VISIT THE RADIATION THERAPY CENTRE?

On the first visit or consultation, the radiation oncologist will discuss on treatment options with the patient. Following this, an appointment will be arranged for planning procedures in preparation for treatment. The duration from the first visit to the start of the treatment is usually about 2 to 3 weeks.

WHAT IS THE PLANNING PROCEDURE?

The planning procedure involves the collection of information necessary for the planning and delivery of the radiation treatment and consists of the Computed Tomography (CT) simulation. Each step of this procedure is carried out in separate visits before actual treatment begins.

What is CT simulation?

The CT simulation procedure is carried out using a machine called the CT simulator. It is very similar to a diagnostic CT scan machine, with an additional function of the laser alignment system and a flat couch. The procedure involves taking X-ray images so that the radiation oncologist and radiation therapist can make precise plans of the body area that will be treated. The procedure takes slightly less than an hour.
Before CT simulation, the staff may ask the patient to change into a gown. During the CT simulation, the area that will be treated needs to be exposed. Special accessories may be used to help the patient maintain the same position whilst undergoing the procedure. It is important for the patient to lie still and breathe normally while lying on the CT couch during the procedure. This will ensure accuracy of the planning as well as the actual radiation treatment.

The radiation therapists will take some measurements and X-ray images while the patient is in position. They will make small tattoos on the skin. These marks enable the therapists to position the patient correctly for treatment, in relation to the laser alignment system in the treatment room, and allows accurate positioning each time radiation treatment is administered.

The CT simulation procedure may involve a type of dye or contrast that is given through the patient’s vein before the scan is carried out. The contrast will highlight the structures within the body. Patients may be advised to fast from food four hours before their scanning appointments. Do inform the medical staff for past history of asthma, diabetes or any drug or non-drug allergies.

**After CT Simulation**

An appointment will be given after the CT simulation for the treatment which usually starts in 2 to 3 weeks’ time. The radiation oncologists and therapists will use the information collected to design and plan for individualised radiation treatment.

**WHAT IS RADIATION TREATMENT?**

Radiation treatment is the use of precisely-calculated doses of high-energy X-rays to treat parts of the body where there is disease. It is generally pain-free. A course of radiation treatment can involve single or multiple sessions depending on the oncologist’s prescription. Most patients receive their treatment as an outpatient at the Radiation Therapy Centre. Treatment will include initial and follow-up consultations, to ensure that our patients receive the full continuum of care.
WHO ARE THE PEOPLE INVOLVED IN RADIATION TREATMENT?

The team providing radiation therapy comprises a team of:

- Radiation Oncologists – They are doctors who specialise in using radiation to treat cancer / disease.
- Medical Physicists – They ensure that the equipment delivers the right dose of radiation and functions accurately.
- Radiation Therapists – They will guide the patient during treatment, position the patient for treatment and operate the equipment that delivers the radiation. They are also involved in planning for individualised treatment.
- Nurses – They coordinate cancer care, counsel patients and their family on how to manage side effects and address concerns about radiation therapy.

WHAT IS THE TREATMENT LIKE?

The treatment is painless and takes about 15 to 30 minutes for each session. The treatment is usually scheduled from Monday to Friday unless specially instructed by radiation oncologists.

At the start of the session, the radiation therapist will explain what to expect in the treatment room. The patient will be given a gown to change into only if needed.

In the treatment room, there is a treatment machine called the Linear Accelerator (LA). The radiation therapists will position the patient on the treatment couch according to the measurements and the marks drawn on the skin during the CT simulation session.

Once the treatment position is confirmed, it is ready to begin the actual treatment. The radiation therapists will exit the room to the adjoining console room when the treatment starts. They will monitor the patient closely through a closed circuit camera and communicate via an intercom.

The treatment machine may rotate around the couch as it positions itself to deliver the treatment. It will emit a beeping sound when it is turned on. The X-ray beams from the Linear Accelerator are invisible. It is important for the patient to lie still and breathe normally throughout the treatment procedure. This will ensure the accuracy of the treatment. However if the patient feels uncomfortable at any point, he/she can raise his/her arm to alert the radiation therapists. They will stop the treatment immediately and help. The machine will stop beeping when the treatment is completed. The therapists will re-enter the room and help the patient down from the treatment couch.
WILL I EXPERIENCE ANY SIDE EFFECTS?

Depending on which part of the body is treated, side effects may vary from person to person. Most side effects are temporary and a normal part of the treatment process. During the course of the treatment, the patient can discuss any concerns he/she may have with his/her treatment team of oncologists, therapists and nurses.

Patients and their family members can also refer to our informational leaflets or brochures that describe possible side effects associated with the area that is treated.

WHAT ARE SOME THINGS I CAN DO DURING TREATMENT?

- Eat a well-balanced diet daily.
- Take special care of your skin, as it may get dry or sensitive due to treatment. A gentle moisturising cream like Aloe Vera or Vitamin E cream can be used. Please do consult the radiation oncologist before using these creams.
- Eat sufficiently to maintain your weight before and after treatment. Your body needs more calories during treatment so you may need to eat more than usual. A dietician from the hospital can help you set up a nutritional food plan.
- Drink fluids that are high in calories, such as shakes or nutritional supplements. You can approach our staff for further information about these supplements.
- Drink at least eight cups of fluids every day. Fluids can come from water, gelatin, ice cream, fruit juice, iced tea, soup or milk.
- Get plenty of rest. You can resume your regular activities as long as you have adequate rest and do not overexert yourself. Your radiation oncologist will advise you how much exercise you should get.
- Sleep at least eight hours daily and take naps during the day if you need to. Fatigue is a common side effect, which will ease when your course of treatment is completed.
- The effects of radiation treatment may continue for a few weeks after your last treatment session and will take some time to subside. Your skin that is exposed to treatment will continue to be sensitive to the sun. You will need to use additional sun protection on and around the treatment area. Do be very gentle with your skin.
- If you have had radiation treatment to the mouth, it is essential that you inform your dentist each time you go for a dental check-up.

WHAT IF I AM TAKING OTHER MEDICATION?

The patient needs to inform our radiation oncologist or nurses if he/she is taking any prescription or over-the-counter medication and other supplements. The radiation oncologist will review all current medication. Family doctors can also prescribe any medication for problems other than cancer to the patients.
WHAT HAPPENS AFTER RADIATION TREATMENT?

When the course of treatment is completed, the radiation oncologist will schedule post-treatment reviews for patients to monitor the response of the tumour, side effects and the patient’s health.

CANcer SUPPORT RESOURCES

**CancerLine**

Staffed by oncology-trained nurses; this is a FREE counselling service for patients, their families and members of the public on cancer related issues.

Tel: (65) 9722 0569 (Monday to Friday: 8:30am – 5:30pm)
Email: Cancerlinenurse@nuhs.edu.sg

**Support Groups**

The National University Cancer Institute, Singapore (NCIS) has various support groups to help people cope with cancer. Types of support groups include:

- Nasopharyngeal Cancer (NPC) One Heart Support Group – For head and neck cancer patients
- Breast Cancer Support Group – For breast cancer patients
- Gynaecological Cancer TEAL Support Group – For ovarian cancer patients
- Haematopoietic Stem Cell Transplant (HSCT) Support Group

Membership is free. For more information, please call CancerLine Nurse at: 9722 0569 (Mon – Fri: 8.30am – 5.30pm) or email CancerLineNurse@nuhs.edu.sg.

The Singapore Cancer Society also has various support programs to help people cope with cancer. To join a support group, please call (65) 6421 5828 or email welfare@singaporecancersociety.org.sg.

Types of programs include:

- Ostomy Club – For colorectal cancer patients
- ‘Reach to Recovery’ Programme – For breast cancer patients
- Look Good Feel Better Programme – For female cancer patients

**ABOUT RTC@NCIS**

Established in 1999, the Radiation Therapy Centre (RTC) of the National University Cancer Institute, Singapore (NCIS) houses state-of-the-art facilities and an internationally recognised team of radiation oncologists, therapists, physicists, nurses and healthcare professionals. Dedicated to providing holistic and specialised care, NCIS aims to be one of the world’s leading centres, dedicated to the prevention, management and cure of cancer.
The radiation oncology team at RTC is available to discuss treatment, assist our patients and families with the management of side effects and take them through the planning, treatment and post-treatment stages. The team constantly monitors the accurate functioning of the equipment necessary for the patient’s treatment so that radiation treatment is delivered precisely and safely. Patients are encouraged to approach the team for recommendations of suitable resources such as cancer support groups and counselling lines that can help them cope with their illness.

**CONTACT INFORMATION**

**National University Cancer Institute, Singapore (NCIS)**  
**Cancer Centres**  
Kent Ridge Wing, Level 3 and 4  
Radiation Therapy Centre (RTC)  
Kent Ridge Wing, via Linkway on Level 4  
**Opening Hours:** 8:30am – 5:30pm (Mon – Fri: except on Public Holidays)  
For appointments, please contact  
Tel: (65) 6772 4870 / 4854  
Email: CancerApptLine@nuhs.edu.sg

For International Patients and Visitors  
The International Patient Liaison Centre (IPLC) is a one-stop centre to support all the medical needs of our foreign patients.  
Tel: (65) 6779 2777 (24-Hours Helpline)  
Fax: (65) 6777 8065  
Website: www.nuh.com.sg/iplc

For other general enquiries, please contact  
**National University Cancer Institute, Singapore (NCIS)**  
1E Kent Ridge Road, NUHS Tower Block, Level 7, Singapore 119228  
Email: ncis@nuhs.edu.sg  
Website: www.ncis.com.sg

**National University Hospital**  
5 Lower Kent Ridge Road, Singapore 119074  
Tel: (65) 6779 5555  
Fax: (65) 6779 5678  
Website: www.nuh.com.sg
Nearest MRT Station: Kent Ridge Station (Circle Line)
Commuters can alight at the Kent Ridge Station right at the doorstep of the NUH Main Building. Please exit the station via Exit A.

For more information on specific directions to NCIS Clinics, log on to www.ncis.com.sg.
For more information on directions to NUH, log on to www.nuh.com.sg.

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 surgery, your health or medical condition.
Information is correct at time of printing (Mar 2012) and subject to revision without notice.