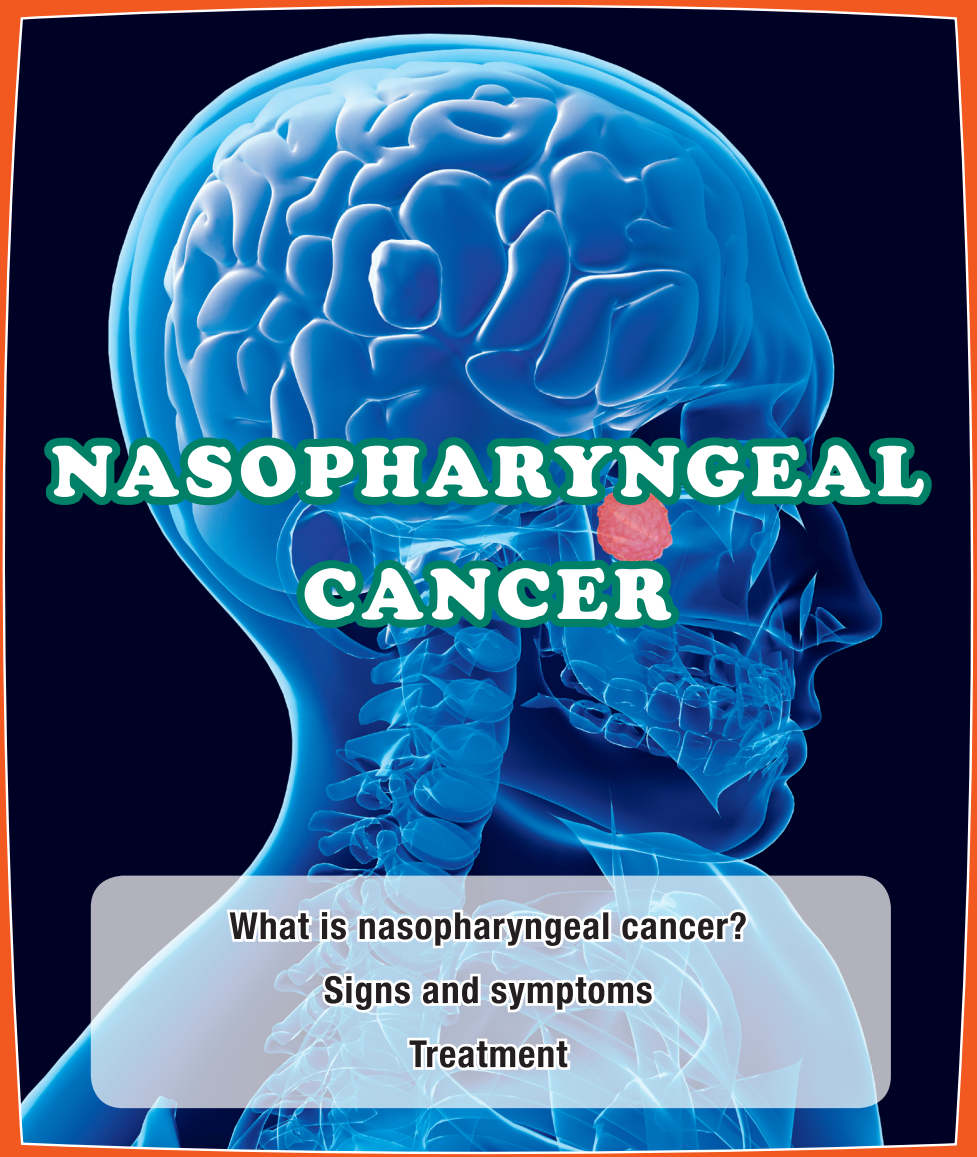
Inspired by Hope
Committed to Care

National Cancer Centre Singapore
SingHealth



NASOPHARYNGEAL CANCER

What is nasopharyngeal cancer?

Signs and symptoms

Treatment

An Educational Initiative by National Cancer Centre Singapore

Contents

Introduction 3
What is Nasopharyngeal Cancer (NPC)? 4
What causes NPC? 5
Signs and symptoms of NPC 5
How is NPC diagnosed? 6
Staging of NPC 7
Treatment of NPC 7
Prognosis 10
Radiotherapy for NPC 10
Patient pathway for radiotherapy 11
Preparing for radiotherapy 12
What happens during radiotherapy? 14
Possible side effects of radiotherapy 15
What happens after radiotherapy? 18
Questions you can ask your doctor 19
Supportive care 20
Treatment and support units at NCCS 21
Internet resources 22

Special thanks to the following members who have contributed to the development of this booklet:

Content:
Dr Cheah Shie Lee | Associate Consultant, Division of Radiation Oncology
Text:
Ms Jenna Teo | Senior Nurse Manager, Cancer Education & Information Service
Photo:
Ms Yusnita Omar | Assistant Manager (Allied Health), Division of Radiation Oncology
Mr Eric Pang | R+D Senior Radiation Therapist, Division of Radiation Oncology
Ms Sin Sze Yarn | Senior Radiation Therapist, Division of Radiation Oncology

Document No. CEIS-EDU-PEM-016/1016

Disclaimer
The National Cancer Centre Singapore does not endorse or promote the use of any product mentioned in this booklet. The information is presented in a summary to provide an understanding and knowledge only. It does not recommend the self-management of health problems or replace consultation with your doctor. You should never disregard medical advice or delay seeking it because of something you have read here.

First edition Oct 2003. Second edition May 2008. Revised Jun 2014. This edition Nov 2016.

Copyright © National Cancer Centre Singapore
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission from the publisher.

Introduction

Nasopharyngeal Cancer (also known as NPC) is the 8th most common cancer affecting men in Singapore (Singapore Cancer Registry, Interim Report 2009-2013). It affects more men than women, and is most frequently seen amongst the Chinese ethnic group.

This information booklet is intended for patients who are about to receive radiotherapy treatment for NPC. It contains some general information on NPC and outlines the treatment options with particular attention to radiotherapy treatment. It will describe how radiotherapy treatment is planned and given, the possible side effects during and after radiotherapy and how to best cope with them. Your doctor will discuss more information in detail specific to your condition and treatment.

We hope you will find this booklet helpful. It is however intended only as a guide and is not a substitute for medical advice. If you have any further questions or concerns, please do not hesitate to ask a member of your health care team.

If you find this booklet useful, share it with your family and friends. If you have any questions about the issues raised in this booklet, or if there is any information you are seeking that is not covered here, please contact the Cancer Helpline on telephone 6225 5655 to speak with a nurse counsellor. You can also reach them by email: cancerhelpline@nccs.com.sg.

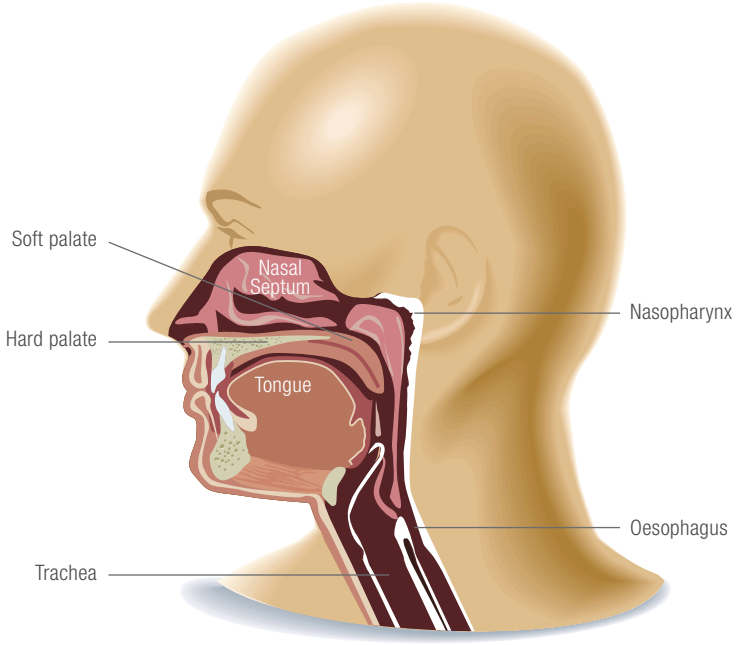
Other cancer information booklets are available from the National Cancer Centre Singapore's Cancer Education and Information Service department. You can contact the Cancer Helpline to request for a copy. For the electronic version of this booklet, please visit: http://www.nccs.com.sg/publications or scan here:

WHAT IS NASOPHARYNGEAL CANCER?

Nasopharyngeal Cancer (NPC) is a disease in which cancer cells develop from the tissues of the nasopharynx – an area located behind your nose, just above the mouth and throat (see diagram below).

Normal cells grow, divide and replace themselves in an orderly manner. Your body relies on this orderly activity to repair injuries and replace worn-out tissues. Cancer develops when cells divide too quickly and grow in an uncontrollable fashion. A cancerous growth can invade surrounding tissues and may even spread to other parts of the body.

The Nasopharynx



The nasopharynx is an air cavity in the upper part of the throat (pharynx) that lies behind the nose. It lies just above the soft part of the roof of the mouth (soft palate) and is below the base of the skull. It connects the nose to the back of the mouth, allowing you to breathe through your nose. There is an opening on each side of the nasopharynx that leads to the ears.

WHAT CAUSES NASOPHARYNGEAL CANCER?

The exact cause of NPC is unknown. However scientists have found that the Epstein-Barr virus (also known as EBV, which also causes glandular fever) is linked with an increased risk of developing NPC. EBV infection is common especially in areas of the world such as Southern China and South East Asia and having it does not necessarily mean you will have NPC. Certain inherited characteristics and dietary habits may also be linked with a higher risk of NPC.

It is important to note that just like other cancers; NPC is not infectious and cannot be passed from one person to another through physical contact.

SIGNS AND SYMPTOMS OF NASOPHARYNGEAL CANCER

Each patient is different, and some patients with early stage NPC may not have any symptoms at all.

Signs and symptoms of NPC include:

- **Painless neck lump**
- **Nosebleeds - particularly in adults**
- **Hearing problems - loss of hearing or ringing in the ears, particularly if occurring on one side only**
- **Bloodstained sputum**
- **Double vision**
- Ear ache or discharge from the ear
- Nasal obstruction or stuffiness
- Frequent headaches
- Difficulty swallowing
- Sore throat that does not go away
- Hoarseness of voice
- Fatigue
- Weight loss of unknown reason

These symptoms are also common in other conditions besides cancers, and do not necessarily mean you have NPC. However if they persist, it is important to see a doctor.

If any of the symptoms listed above in bold is present, one should seek early medical advice.

HOW IS NASOPHARYNGEAL CANCER DIAGNOSED?

Your doctor will examine you very carefully. This will include taking a complete medical history, a thorough medical examination and performing several tests such as:

Nasoendoscopy - A thin flexible camera tube with light at the end is inserted through the nostril to allow a better view of the nasopharynx. This allows the doctor to check for any abnormalities such as bleeding or growth.

Biopsy - If an abnormal area is seen during nasoendoscopy, a sample of the affected tissue is removed for further examination under the microscope. This may be done under local anaesthesia.

Computer Tomography (CT) scan - This is a scan which takes multiple X- ray pictures of the body from different angles which are then used to build up a 3-dimensional picture of the inside of the body using a computer to check the area of the cancer and to see if it has spread to other parts of the body.

Magnetic Resonance Imaging (MRI) scan - This scan uses magnetic fields instead of X-rays to detect the cancer and to look for any spread to the lymph nodes. You will be asked to lie as still as possible on a couch inside a long tube whilst the scan is being done. It is painless but may be a little noisy and some people may find it slightly uncomfortable. It is useful in giving more detailed pictures of the head and neck area. If you have a pacemaker or other metallic objects in your body, you may not be able to have an MRI scan due to the potential harmful effect associated with metal in a magnetic field.

Bone scan - A bone scan uses low level radioactive substance that is injected into the patient to detect cancerous spread to the bones. Most of the radioactive material will leave the body within a few hours and it is safe to go home after the procedure.

Positron Emission Tomography (PET-CT) scan - A PET-CT scan combines both a CT scan and a PET scan at one sitting to give better pictures of the cancer and its extent. A CT scan uses X-rays to take pictures from the top of the head to mid-thigh to check for any unusual areas. A PET scan on the other hand uses small amount of injected radioactive glucose which will show up in areas of the body with active cells such as a growing cancerous lump. This will help to check if the unusual areas seen on CT scan are suspicious for cancerous growth.

Blood tests - Blood tests are usually done to check your general health including how well your liver, kidneys and other organs are working, and to check for infections which may affect your treatment.

STAGING OF NASOPHARYNGEAL CANCER

The stage of a cancer describes how far it has spread; whether it is contained within its site of origin or if it has spread to surrounding tissues or even other parts of the body. This will help determine the right treatment, and help estimate a patient's outlook for recovery.

Stage I

This is early stage cancer, with the cancerous growth limited to the nasopharynx, nose or mouth area only. It has not spread to the lymph nodes.

Stage II

The cancer has spread to the parapharynx (surrounding areas of the nasopharynx) or to lymph nodes on one side of the neck or to those behind the throat.

Stage III

The cancer has extended further to either involve the base of the skull, the sinuses, or has involved lymph nodes on both sides of the neck.

Stage IV

This is subdivided into Stage IVa, IVb and IVc as follows:
Stage IVa - The cancer has involved the hypopharynx (bottom part of the throat), the nerves, brain or the eyes. Additionally lymph nodes on one or both sides of the neck may be affected but their size remains less than 6cm.
Stage IVb - This stage of cancer has spread to lymph nodes above the collarbone, and/or the lymph node size measures more than 6cm.
Stage IVc - The cancer has spread beyond the neck to involve other parts of the body such as the lung, liver or bones.

TREATMENT OF NASOPHARYNGEAL CANCER

In general, cancers can be treated with radiation therapy, chemotherapy or surgery. In some cases, the best approach involves a combination of these.

Your doctors will discuss with you the most appropriate treatment, taking into account the stage of the cancer, your age and overall health. It is important to discuss all the possible treatment choices including what to expect and possible side effects to help you make an informed decision.

Sometime it can be difficult to come to a decision especially when presented with a lot of information over a short space of time. While some people feel overwhelmed, others may feel that they have not been given enough information. You may feel that you want to ask for a second opinion from another specialist for reassurance. This is understandable and can be a valuable part of your decision-making process.

You may find it helpful to make a list of questions you would like to ask your doctor. Please see the section on 'Questions you may ask your doctor' for a list of suggested questions.

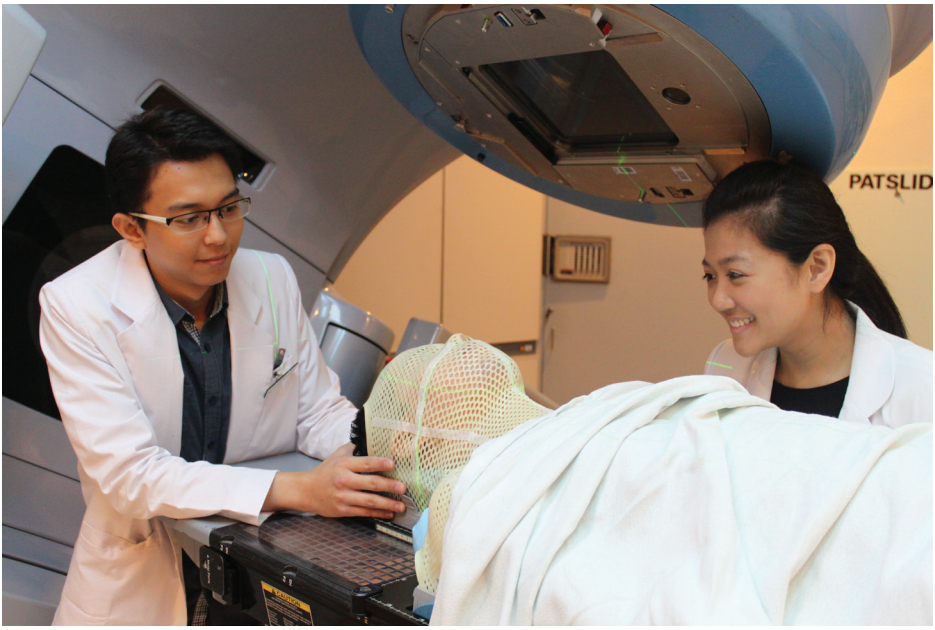
Radiotherapy

Radiotherapy is the main treatment for NPC. In early stage NPC, the success rate from radiotherapy treatment alone may be in excess of 90%. Radiotherapy may be given as external beam radiotherapy and/ or internal radiotherapy. External beam radiotherapy uses high energy X-rays directed from a machine called a linear accelerator to a specific part of the body to damage and kill cancer cells. Internal radiotherapy is also called brachytherapy. This is where small radioactive material is placed directly on, or very near the cancer. It is a less common technique which is not suitable for most patients with NPC.

Radiation affects both normal and cancer cells. Generally, cancer cells are more sensitive to radiation and more cancer cells are killed. On the other hand, normal cells are better able to repair themselves. Hence, damage to normal cells is usually temporary. This is also the reason why radiotherapy has side effects.

The commonest technique of external beam radiotherapy used currently to treat NPC is intensity modulated radiotherapy (IMRT). Using IMRT, the strength (intensity) of radiation beam coming from 9 different angles around the body is varied (modulated) allowing more radiation dose to the cancer cells but less to the surrounding normal cells. As a result, IMRT may give a better chance of cure with lower risk of side effects from radiation treatment.

For more information about the various radiotherapy techniques available, please refer to our separate booklet entitled 'Understanding Radiation Therapy'



Chemotherapy

Chemotherapy is the treatment of cancer using anti-cancer drugs which are commonly given as an injection into the vein. These drugs stop cancer cells from growing and reproducing.

Chemotherapy can either be given on its own before radiotherapy, together with radiotherapy as a combined treatment, or given alone following radiotherapy. A course of chemotherapy may last from 1 to 4 days, and is usually repeated every 3 to 4 weeks. In some cases, chemotherapy may be given once a week.

If you need chemotherapy, you will be seen by a specialist called a medical oncologist who will advise on the most appropriate chemotherapy drugs and schedule to use in your situation.

Surgery

Surgery or operation is not a common treatment for NPC. This is because there are other more effective treatments such as radiotherapy. Additionally, the cancer is in an area surrounded by important nerves and vessels that is not easy to get to, making surgery technically difficult. You may however have surgery if the cancer returns after your treatment with radiotherapy.

Clinical trials

Some patients may be invited to take part in a clinical trial. New treatments are being developed all the time, and the only reliable way to know if a new treatment is more effective than existing treatment is to carry out a clinical trial. A trial may be done to test new treatment (such as new drugs or new radiation techniques), test new combination of existing treatment or changing the way in which existing treatment is given.

If you decide not to take part in a clinical trial, your decision will be respected and you do not have to give a reason. Your care and treatment will not be affected. It is however helpful to discuss with your health care team if you have any particular concern or questions.

For more information about Clinical Trials, please scan this QR Code to download the electronic version of the booklet:

Treatment by stage

Stage I	: Radiotherapy alone
Stage II	: Radiotherapy alone (may be combined with chemotherapy in selected cases)
Stage III, IVa, IVb	: Combined chemotherapy and radiotherapy treatment (may be radiotherapy alone in selected cases)
Stage IVc	: Chemotherapy alone (may be combined with radiotherapy in selected cases)

PROGNOSIS

A patient's outlook for recovery depends on many factors such as the stage of his/her cancer, their age and general health at the time of diagnosis. It also depends whether they respond to the treatment.

Generally NPCs are treatable, and has a high cure rate in the early stages with over 90% of patients with Stage I NPC surviving 5 years after diagnosis.

Your doctor will be able to discuss this in greater detail with you.

RADIOTHERAPY FOR NASOPHARYNGEAL CANCER

Each patient's radiotherapy treatment has to be carefully and individually planned so that the X-rays are targeted precisely at the cancer and do as little harm as possible to the surrounding healthy tissues. You will therefore have to attend a few planning appointments prior to starting treatment.

Who will I meet?

During your radiotherapy treatment, you will meet many health care professionals who specialise in different aspects of your treatment as part of a multidisciplinary team. They include the following:

Radiation Oncologist - The doctor in charge of your radiotherapy treatment is called a Radiation Oncologist. You will see your Radiation Oncologist or a member of his/her team each week during your treatment in order to monitor your side effects.

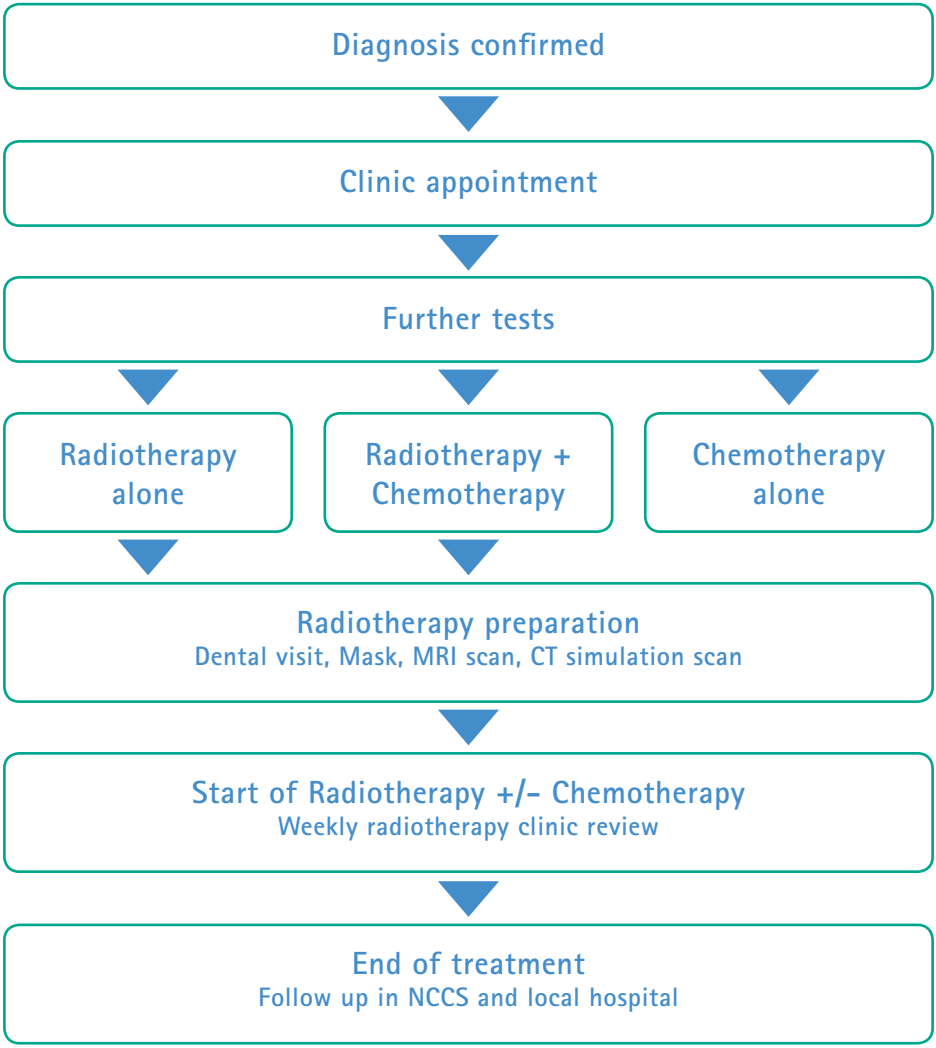
Radiation Therapists - The radiation therapists (or radiation therapy technologists as they are also known) are the main group of people you will meet during your treatment. They are specially trained in radiotherapy and operate the machine which delivers the radiation treatment. You will first meet them when you attend for your planning appointments. They will help position you for treatment each day, and will provide information and advice throughout the course of your treatment.

Radiotherapy Nurses - The nurses in our department are experienced in looking after patients who are undergoing radiotherapy treatment. They are able to advice on skin care and will guide you on how to look after a feeding tube should you have one.

Dietician - A dietician is a food and nutrition specialist who is able to assess and advice you throughout the course of your treatment to ensure you are maintaining a healthy food intake. This is important because patients undergoing radiotherapy for NPC often have difficulty eating normally and will need nutritional supplements. A balanced intake of calories and nutrients is essential to ensure treatment can be completed as planned and recovery is faster.

Speech therapist - A speech therapist is an expert in looking after patients with communication, or eating and swallowing problems. NPC and its treatment can affect one's ability to eat and talk, hence it is useful to see a speech therapist that can assess and teach you exercises and strategies to help maintain or regain the ability to talk and eat safely.

PATIENT PATHWAY FOR RADIOTHERAPY



PREPARING FOR RADIOTHERAPY

Before you have any treatment, your Radiation Oncologist will discuss with you what radiotherapy will involve, its benefits and risks. You will be asked to sign a consent form which is a written record that you understand and have agreed to undergo a course of radiotherapy treatment. Further explanation will be given to you at each appointment so please do not hesitate to ask if you have any questions or concerns.

Pregnancy

Female patients must not be or become pregnant during the course of radiotherapy. This is because radiation is very harmful to an unborn baby. If you think you may be pregnant at any time during your treatment you must inform the staff immediately.

Dental visit

A dental check is essential prior to starting radiotherapy to the head and neck area. The dentist will check your teeth and gums thoroughly, clean your teeth and remove any teeth that would not withstand the late side effects of radiation (see section on 'Possible side effects of radiotherapy'). These should be done ideally before your radiotherapy planning appointment. Occasionally, your dentist may advice postponing the start of your radiation treatment to allow complete healing after dental extraction. Please inform your radiotherapy team of the outcome of your dental visit(s) in order to facilitate your radiotherapy planning process.

If you have not been given a copy of a patient education video on 'Radiotherapy and Its Dental Implications' from the National Dental Centre, please request for a copy from our radiation therapist.

Mask

Almost all patients undergoing radiotherapy for NPC will have to wear a plastic mask (also called a shell) whilst lying on your back during each treatment session. This helps to keep you still and ensures that the radiotherapy target is as accurate as possible during each treatment.

Each mask is custom made for a particular patient by our trained mould room technicians or radiation therapists. The procedure lasts for approximately 30 to 45 minutes. The mask is made of a special perforated plastic material which becomes soft and flexible when soaked in hot water. It is then placed over your face and moulded to the shape of your face and neck. It will feel a little strange, like having a warm towel over your face but it is painless. Once the plastic cools down it will harden and is ready for use right away. You will also have your own custom made headrest. The mask and headrest will be labelled with your details and kept in our department for the duration of your treatment.

Some patients may worry about the thought of having a mask made, especially if you have claustrophobia (a feeling of anxiety triggered when in enclosed or confined spaces). Please talk to your doctor or radiation therapist so that we may find ways to help.

You will be asked to remove your dentures (if any) before the mask making procedure, and to avoid shaving afterwards for subsequent radiotherapy procedures. This helps to ensure that the mask still fits really well for the duration of your treatment.

Please note that during your MRI scan you may also be asked to wear this mask. One of the radiation therapists will be there to assist with mask fitting. The MRI scan procedure may last approximately 30 to 45 minutes. The pictures from the MRI scan will help your doctor identify the tumour on your radiotherapy treatment plan.

CT simulation scan

You may have had a CT scan already as part of your diagnosis. You will still need a CT planning or simulation scan as this scan is done with you lying on your back whilst wearing your mask. You will be in the same position for your actual radiotherapy treatment. This scan mimics what actually happens during your treatment in order for us to locate precisely and carefully where the target area is when you are in position for treatment daily. This procedure usually lasts for about 30 minutes.

Most patients will also be given an injection of contrast (dye) to help us see the area that needs to be treated better. You will normally be asked to fast for 4 hours before the procedure. Your doctor or radiation therapist will advise you accordingly prior to this scan to ensure safe administration of the contrast.

Permanent skin marks

During your CT simulation scan appointment, we will draw on the skin of your chest with felt pens. As these marks will wash away you will be given small dots (also known as tattoos) using permanent ink. Having these permanent skin marks will help us position you correctly and accurately each day for your treatment without having to worry that it will be accidentally washed off.

Once these procedures are completed, the information will be used to carefully prepare your personal radiotherapy treatment. You will usually start your treatment about 2 weeks after this.

WHAT HAPPENS DURING RADIOTHERAPY?

On your first day of radiotherapy treatment, one of our radiation therapists will explain what is going to happen each day. You will be taken into the treatment room and asked to remove any clothing or jewellery that covers the area to be treated. The radiation therapists will help you onto the treatment bed and place your custom made mask on you. Once you are comfortable they will adjust the mask and bed into the correct position. Following this, they will leave to switch on the radiotherapy machine from outside the room. Although they are not in the room, they can see you all the time via closed circuit TV and talk to you through the intercom.

The radiotherapy machine may seem big, but you will not see or feel anything. The machine moves around you to deliver radiation from different angles, but it will not touch you. In fact it is similar to having an X-ray except the radiation is much stronger. Radiotherapy will not make you radioactive, and it is perfectly safe for you to go home and spend time with your loved ones as usual.

Radiotherapy is usually an outpatient treatment, given once a day during the week (Mondays to Fridays). It may range from just one treatment to a course of treatment that lasts up to 7 weeks. Each treatment session lasts about 15 to 20 minutes and most of this time is spent getting you into the right position.

It is important to attend for your treatment as scheduled and to avoid any unnecessary breaks during your radiotherapy treatment because missing treatments may make the radiotherapy less effective.

Weekly portal imaging (check X-rays)

Every week during the course of your treatment, the radiation therapists will take either X-rays or computer-based pictures of the area being treated to check that the radiation beams are still going to where they are meant to according to your treatment plan. This is known as portal imaging. From these, minor adjustments may be made to ensure continued safety and effectiveness of your treatment. You may lie down for a little longer than usual on the days the portal images are being taken. Because it is not an actual scan, we are unable to tell how the cancer is responding to treatment from these pictures.

Weekly review clinic

During your treatment you will see your doctors at least once a week to check that you are progressing as expected through treatment. Your weight will be checked and we will ask about your food intake and any symptoms you may have such as pain. You will be given advice and medications as needed. You may also meet the dietician and speech therapist who can provide further advice on your diet, speech and swallow.

POSSIBLE SIDE EFFECTS OF RADIOTHERAPY

Side effects depend on the area being treated, the total dose received and the duration of treatment. Every individual is unique and you may not have the same side effects as another patient who is also receiving radiotherapy for NPC.

Not all the side effects listed below may be applicable to you. Your doctor will discuss these in greater detail with you.

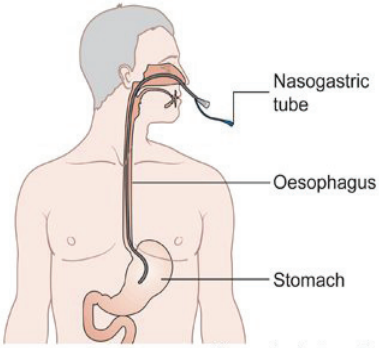
Early side effects

These are side effects that occur during your radiotherapy treatment or within the first 3 months after starting radiation. These side effects may not occur immediately but will usually appear after the first few weeks. They may worsen in the 7 to 10 days after treatment has ended. Most are temporary and noticeably better within 8 weeks after the end of radiotherapy although some may last for longer, or may not completely return to normal. Side effects may range from mild to very troublesome for some.

Tiredness - You may feel more tired than usual once you have started treatment. There are many reasons for this including the physical stress of being ill, not eating and drinking normally, and the daily commute from home to NCCS for treatment. You will need more rest than usual. Do not hesitate to ask for, and accept help from family and friends. It is important not to miss any treatments so if you have difficulty coming for your treatment, please discuss with the team looking after you.

Dry mouth and thick saliva - Radiotherapy can affect the salivary glands so you will notice that you have less saliva than usual. Your mouth and throat may feel dry and this may cause difficulty in eating and speaking. You may also notice that your taste buds are altered. Your saliva may become noticeably thicker and stickier, like mucus. Mucus build-up can irritate the throat and cause you to cough especially at night.

Mouth and throat pain - Soreness of the mouth and throat may set in, making it difficult to eat your usual diet. A softer (more liquid) diet helps and you will be encouraged to drink nutritional supplements to ensure your intake is adequate and you are not losing weight. You will also be given painkillers to help ease the discomfort but some patients may find it too painful to swallow.



As the radiotherapy progresses many patients may find it increasingly difficult to maintain enough food intake despite these measures. If this is the case, a feeding tube is usually recommended. This small plastic tube (called a nasogastric tube) is usually inserted through your nose and will allow liquid supplements to be given directly into the stomach without causing any pain. Our nurses will guide you and your carers on how to look after it. Some patients get very upset when they know that they need a feeding tube because it is a visible reminder that they are ill. It is important to remember that eating during this time can be very stressful and having the tube helps take away some of the stress.

Your health is a priority and being able to eat enough on a daily basis will help you feel much better and allow you to recover faster. Importantly weight loss may also result in poor fitting of the treatment mask which may affect the high precision of radiation delivery.

The feeding tube is a temporary measure and will be removed once you are able to eat and drink well. Your doctor and dietician will closely monitor and advice you accordingly throughout your treatment and recovery time thereafter.

Helpful tips:

- Rinse your mouth with non-alcohol based mouthwashes as advised by your doctor regularly. Avoid commercial mouthwashes which may contain alcohol and increase mouth dryness
- Drink plenty of fluids throughout the day
- Avoid tobacco and alcohol as these may irritate your mouth and throat further
- Practice good oral hygiene. Brush your teeth with a soft bristled toothbrush after each meal and before bedtime. Keep your dental appointment for regular checks by the dentist
- Eat a well-balanced meal high in calories and protein (including supplements) as advised by your doctor and dietician. You may find it easier to eat 5 to 6 smaller meals a day instead of 3 large meals.
- Limit acidic drinks such as orange juice and spicy food which may cause further mouth and throat irritation

Skin changes - The skin of the area being treated may become pink or tanned after 2 to 3 weeks of radiotherapy. It may feel dry or itchy. As treatment continues it may become bright red or develop into a dark tan. Occasionally the skin in sensitive areas such as the area behind your ears and near the collarbone may peel and become uncomfortable. The reaction is similar to sunburn which may be mild to severe. You will be advised on how to care for your skin during radiotherapy and what to apply to soothe any discomfort. Please do not self-medicate. The skin changes may worsen in the week after your treatment has completed but will start to improve soon after.

Helpful tips:

- Wash the area gently using mild unscented soap. Do not scrub the skin. Pat dry gently with a towel
- Avoid direct sun exposure on the treatment area
- Use a recommended moisturiser on the treatment area. Do not apply other creams, perfume, cosmetics or other products on the area without checking with your doctor or radiation therapist. Some of these may irritate the skin further or leave a residue on the skin that may interfere with your treatment.
- Men may shave the area using an electrical razor to prevent accidental cuts. Remember not to apply aftershave lotion
- Wear loose fitting clothing in natural fibres around the neck

Hair loss - Radiotherapy may cause hair loss but only in the area being treated. This includes facial hair. Hair loss may be temporary but for some it may be permanent. Avoid direct sun exposure, and use a mild shampoo to avoid irritation and dryness of the scalp.

Hearing changes - You may have already noticed poor hearing prior to any treatment for NPC. Some patients develop a feeling of fullness or earache whilst on radiotherapy. Occasionally, this may be accompanied by an ear discharge. Please tell your doctor so that the right medication may be given. Do not insert anything into your ear canal.

Late side effects

As you recover from your radiotherapy treatment, you will notice that most of the earlier side effects have subsided. There are some late side effects that may occur months to years after treatment which your doctor will discuss with you. These late effects tend to be permanent.

The possible late side effects listed here may seem alarming, however please remember that only a minority of patients develop any severe side effects. Some of these may be treated with medication. Rarely, an operation may be needed if the problem is serious. Please discuss any worries you may have with your doctor. There may be other rare side effects not listed here that your doctor will also discuss with you.

Tiredness - This may last for some months after treatment has ended. Try to keep doing the activities you enjoy and pace yourself so that you do not become overtired.

Dry mouth - Your mouth starts to feel dry during your radiation treatment. Although this will improve afterwards, it may not completely return to normal. You may find that your mouth feels permanently drier, and you prefer food with a softer texture. Some patients notice that their taste buds have changed. Loss of saliva may lead to faster dental decay.

Dental problems - When the mouth is dry, there is less saliva to protect the teeth from decay. You must practice good oral hygiene. Continue with daily brushing and flossing, and see your dentist regularly. Removal of teeth after radiation should be avoided. You must remind your dentist to speak to your Radiation Oncologist if you need any tooth extraction because of the risk of poor healing and jawbone damage after radiotherapy.

Swelling under chin - Radiotherapy may cause swelling under the chin due to fluid build-up. This may occur about 6 to 8 weeks after the end of treatment, and should slowly get better over several months.

Jaw and/ or neck stiffness - Sometimes radiotherapy may cause tightening of the tissues around the jaw and/ or neck. You may notice it is harder to open your mouth wide. The tissues of the neck may also feel firmer to touch. These may lead to swallowing problems. A speech therapist may be able to help in some cases.

Skin changes - Uncommonly some patients develop permanent skin changes such as mottling (uneven skin colour) or patches of small blood vessels near the surface of the skin. These changes are not painful and do not cause any symptoms in itself except for its appearance.

Hormone imbalance - Radiotherapy to the neck and nasopharynx area may lead to lower than normal level of some hormones. You may feel more tired than usual or be prone to feeling cold easily. If your doctor suspects you may have low hormone level, he/ she will organise a blood test. If necessary, you will be given replacement hormone treatment, usually in the form of tablets (pills).

Hearing changes - Because of the proximity of the ear structures to the nasopharynx, some patients may develop hearing problems as a consequence after radiotherapy. You may find it difficult to hear soft sounds or tell different sounds apart. Some patients develop an ear discharge which may last for many weeks. Hearing problems are more likely if you are also receiving chemotherapy as part of your treatment. A specialist ENT (ear, nose and throat) doctor should be able to advise further on how to manage these symptoms.

Cataract - High radiation dose to the lens of the eyes may lead to cataracts (clouding of the lens) causing poor vision. Every effort is made to avoid radiation dose to your eyes but sometimes this is unavoidable. It is easily correctable nowadays with an operation to remove and replace the lens.

Nerve injury - Nerve injury is an extremely rare complication in NPC radiotherapy. Patients with large cancers close to their brain or eyes may already have nerve injury due to the cancer damaging the nearby nerve structures. Your doctor will discuss this in greater detail if it is particularly relevant to you.

WHAT HAPPENS AFTER RADIOTHERAPY?

Once your treatment has finished, you will still be monitored closely in the early weeks after to ensure that your side effects are settling down. You should continue to use your medications as advised by your doctor.

Your first outpatient clinic appointment is usually 4 weeks after radiotherapy treatment has been completed. This will be arranged before the last day of your treatment. Your first post treatment scan will be done approximately 3 months after the end of radiotherapy. This may seem like a long time, but the early radiotherapy side effects will take a few weeks to settle down and your doctor will not be able to properly check how effective the treatment has been until then.

After this appointment you will continue on a regular follow-up schedule alternating between your Radiation Oncologist at NCCS and your referring doctor from the original hospital you were first seen at.

QUESTIONS YOU CAN ASK YOUR DOCTOR

You may find the following list of questions helpful when thinking about what to ask your doctor.

About your illness

1. What type of cancer do I have?
2. What is the stage of my cancer?
3. Is my type of cancer hereditary?

About tests

1. What are these tests for?
2. What will these investigations involve?
3. What are the risks for doing this test?
4. Will the results of this test make any difference to the treatment you provide?
5. How much will these tests cost?

About treatment

1. What are the treatments available for my type of cancer?
2. What treatment would you recommend and why?
3. What is the aim of the treatment?
   - Is it for a cure?
   - Is it for temporary control?
   - Is it to reduce symptoms?
4. What are the benefits of this treatment?
5. What are the possible side effects of this treatment?
6. Can these be prevented or controlled?
7. Are the side effects temporary or permanent?
8. How long is the treatment?
9. How does the treatment work and how is it given?
10. Can I take any herbal medicine or supplements during my treatment?
11. What will happen if I choose not to have any treatment?
12. Can I go back to work while I am on treatment?
13. Will I receive treatment as an outpatient or be admitted to the hospital?
14. What difference will this treatment make to my quality of life, e.g. work, social, physical and sexual activity?

About follow-up

1. How often must I come back for a doctor's check-up?
2. Whom should I contact if I want to change my appointments?

If you have other questions, you may want to add on to the list. Feel comfortable to ask the doctor to explain the answers to you again if you do not understand them. It is also useful to write down the points you have discussed to act as a reference and reminder when you need them.

SUPPORTIVE CARE

A diagnosis of cancer often leads to a variety of emotions such as shock, anger, sadness, and possibly even depression. You do not have to struggle with your illness alone. Help is available to support you and your loved ones through your cancer journey. Apart from the team of doctors and health care professionals looking after you, there are other information and support services you may find useful.

Medical Social Services/ Department of Psychosocial Oncology

The Medical Social Service Department at the hospital attends to patients and their families who need emotional support, financial aid, home care, transportation or rehabilitation. You will need a doctor's referral letter to be seen by a medical social worker.

NCCS Cancer Helpline

The Cancer Helpline is a private, confidential and anonymous one-to-one information and counselling service manned by nurse counsellors. Their aim is to help you through your cancer experience. They are able to speak to you in English, Chinese or Malay. They provide information, emotional and psychological support, counselling, and linkage to health, welfare and cancer support services available in Singapore.

The nurse counsellors do not give medical advice and treatment recommendations, but may be able to assist you in clarifying your doubts and help in putting into perspective the information you may have received from your doctors. They may be contacted via telephone number 6225 5655 or via email cancerhelpline@nccs.com.sg.

Nasopharyngeal Cancer (NPC) Support Group

The NPC Support Group is a voluntary group formed to reach out to NPC patients (as well as survivors) and their caregivers for peer support and sharing of experiences. Additionally, it also runs monthly talks related to NPC. For more information please contact 6436 8126 or email mss@nccs.com.sg.

TREATMENT AND SUPPORT UNITS AT NCCS

Department of Radiation Oncology, National Cancer Centre Singapore

Basement 2, NCCS or Basement 1, Block 2 SGH

- For enquiries regarding radiation treatment appointments: 6321 4210

Ambulatory Treatment Unit (ATU) (Level 3)

- Jasmine Suite : 6436 8134
- Morning Glory Suite : 6436 8160
- Reception Counter : 6436 8100

Useful Contact Details

- Appointment Scheduling Unit : 6436 8088
- General Enquiries : 6436 8000
- Dept of Psychosocial Oncology : 6436 8126
- Outpatient Pharmacy Helpdesk : 6436 8091
- Cancer Helpline : 6225 5655

INTERNET RESOURCES

You may find more information on cancer in general, NPC and radiotherapy treatment on the internet resources listed below. Please take note that health information on the internet may not be applicable to you, and you are encouraged to discuss the information with your health care team.

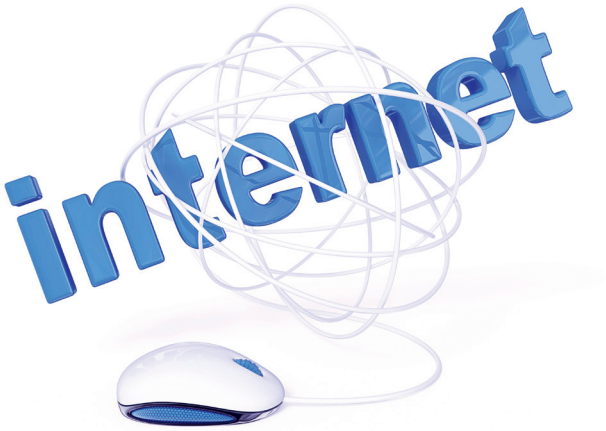
American Cancer Society
www.cancer.org

National Cancer Institute
www.cancer.gov/cancertopics

Macmillan Cancer Support
www.macmillan.org.uk

CancerHelp UK
www.cancerresearchuk.org/cancer-help/

Cancer Council Australia
www.cancer.org.au



HOW YOU CAN HELP US SUPPORT OTHERS

The Cancer Education Department is an integral part of the National Cancer Centre Singapore support services for everyone in Singapore. The two arms of Cancer Education Department are:

- Cancer Education and Information Service (CEIS)
- Patient Education and Support Programmes

CEIS provides the vital link for anyone affected by cancer. It is probably the first stop for someone who wants to know more about the disease. We offer telephone information, support, counselling and linkage to health professionals, volunteers or cancer support groups and organisations. Trained nurses handle the telephone counselling. They can share their skills and discuss options available to help the callers cope with a diagnosis of cancer.

Also available free to the public is a wide selection of publications regarding specific types of cancer, cancer prevention and cancer treatment.

Patient Education and Support Programmes offer a comprehensive range of educational and therapeutic programmes at different phases of the patients' cancer journey. These are done through support and self-help groups, retreats, orientation programmes and befriending services. Family support programmes on the other hand provide support to caregivers and children of cancer patients.

We are just a telephone call away, and we offer help when help is needed most. However, what we have currently achieved would not have been possible without the support and encouragement from our kind donors. Funding is key to ensure that we can meet the demand for our services.

If you wish to make a contribution to these initiatives, you can mail us a crossed cheque payable to "Community Cancer Fund". On the back of the cheque, please provide:

i) Your name & NRIC no.
ii) Email address & your contact number.

Details are needed for tax exemption. Please mail the cheque to:

Community Cancer Fund

Division of Community Outreach & Philanthropy
National Cancer Centre Singapore,
11, Hospital Drive,
Singapore 169610

For enquiries, please call 6236 9440. Alternatively, you can email us at donate@nccs.com.sg.

No amount is too small. If each of us can do our little bit, we can go a long way in helping the cancer sufferers.

Thank you in advance for your act of kindness.

For more information on cancer, please call the

Cancer Helpline at Tel: 6225 5655
or email cancerhelpline@nccs.com.sg

MONDAYS - FRIDAYS : 8.30am to 5.30pm

SATURDAYS, SUNDAYS & PUBLIC HOLIDAYS : CLOSED (Please leave a message)

THIS IS A PUBLIC EDUCATION INITIATIVE BY:

National Cancer Centre Singapore
Division of Community Outreach & Philanthropy
Cancer Education & Information Service
11 Hospital Drive
Singapore 169610
Tel: 6225 5655 Fax: 6324 5664
Website: www.nccs.com.sg