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National Cancer  
Centre Singapore  
SingHealth

# Understanding Radiotherapy for Prostate Cancer

A Guide for Patients & Caregivers



An Educational Initiative by National Cancer Centre Singapore



# *Acknowledgements*

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# ***About this guide***

This booklet serves as a guide for men diagnosed with prostate cancer who are embarking on **External Beam Radiotherapy Treatment (EBRT)**. It covers preparation for treatment as well as how to care for yourself during and after treatment. Hormone therapy may also be prescribed before, during or after EBRT.

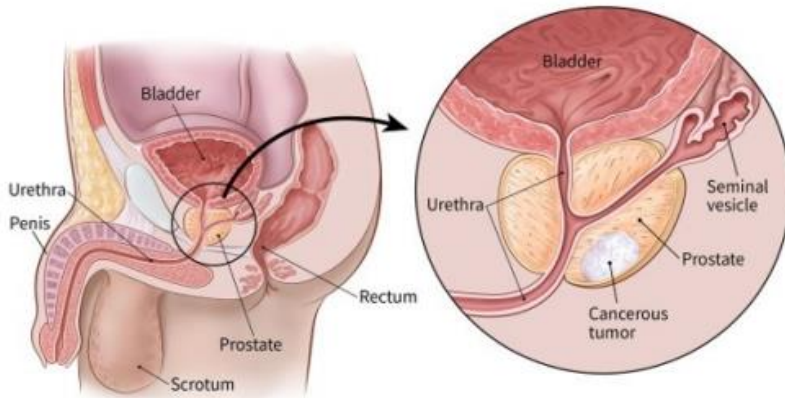
We hope you find this guide useful, and we welcome your feedback for future improvement. Please share this guide with your family and friends as well, if you wish to keep them updated on your treatment journey.

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# Introduction

## What constitutes the Prostate?



American Cancer Society, Inc (2021). What Is Prostate Cancer?  
<https://www.cancer.org/cancer/prostate-cancer/about/what-is-prostate->

***In 2015–2019, Prostate cancer is the second most common male cancer in Singapore.***

*(Singapore Cancer Registry Annual Report 2019, National Registry of Disease Office)*

The prostate gland is found only in males and is part of the male reproductive system. It is about the size of a walnut, and it encircles the upper part of the urethra, which is the tube that empties urine from the bladder.

The prostate makes the seminal fluid, which is a thick and white fluid that mixes with the sperm produced by the testicles to form semen.

## What is Prostate cancer?

Prostate cancer is the uncontrolled (or malignant) growth of abnormal cells of the prostate. In most cases, prostate cancer is relatively slow-growing, such that it typically takes several years to become large enough to be detectable, and even longer to spread beyond the prostate. However, a small percentage of men do experience more rapidly growing and aggressive forms of prostate cancer. For more general information about prostate cancer, please refer to page 13.

## What is Radiation Therapy?

Radiotherapy, also called radiation therapy, is a form of local treatment that uses high-energy X-rays to damage or kill cancer cells in a part of the body. This reduces the size of the tumour, and ideally, eradicates it. Radiation can be delivered from a machine outside the body, External Beam Radiation Therapy or internal radiotherapy, Brachytherapy.

Radiation affects both cancer cells and their surrounding normal cells. Cancer cells are typically more sensitive to radiation than normal cells, and are less able to repair themselves after being damaged by X-rays. Hence, the tumour should gradually shrink after radiation treatment. However, the normal cells and tissues around the tumour will also be affected by the radiation, but they will often recover with time. In real life, this manifests as side effects that originate from the site of treatment, many of which are short-term and temporary. In some cases, long-term complications may also occur.

# YOUR RADIATION TEAM



## **RADIATION ONCOLOGISTS**

They are doctors in charge of radiotherapy treatment. They have overall responsibility for the management of each treatment, including planning, follow up and clinical care.



## **RADIATION ONCOLOGY NURSES**

They are trained to provide radiotherapy-related care. They provide support and care for patients and their caregivers throughout the course of treatment.



## **RADIATION THERAPISTS**

They are professionals trained in the actual delivery of radiotherapy. They also inform, orientate and educate the patients.



## **MEDICAL PHYSICISTS**

They ensure that complex treatments are properly tailored for each patient. They also perform quality control programmes for each treatment plan.



## **DOSIMETRISTS**

They calculate the dose of radiation and ensure that the tumour is targeted accurately. They develop treatment plans that are customised for each patient.



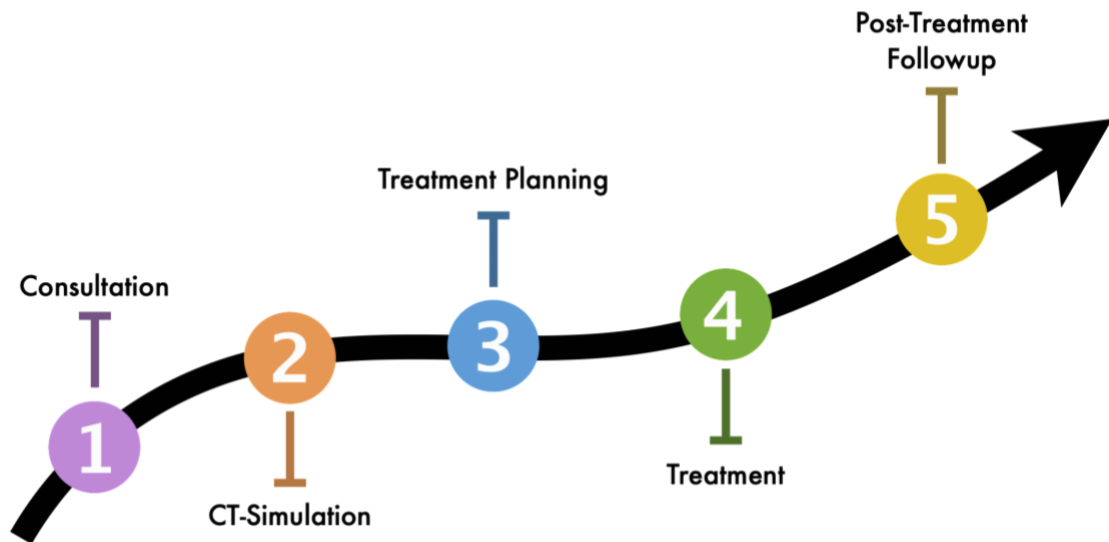
## **ANCILLARY STAFF**

They assist in the coordination of patient care and general administration (i.e. appointment booking, financial counselling).



# Radiation Treatment Journey

## 1. Consultation



During this session, you will meet your Radiation Oncologist. He or she will discuss the details of your treatment, risks and benefits of radiotherapy, and potential side effects. Your doctor will also answer any questions that you may have.

If you are agreeable, a radiotherapy booking will be made after you have signed a **consent form**. This comprises a series of appointments, the first of which will be the CT Simulation.



**Prepare yourself by engaging in some exercises and staying hydrated!**

**Refer to “Prostate Prepared” to find out more!**



Prostate Prepared

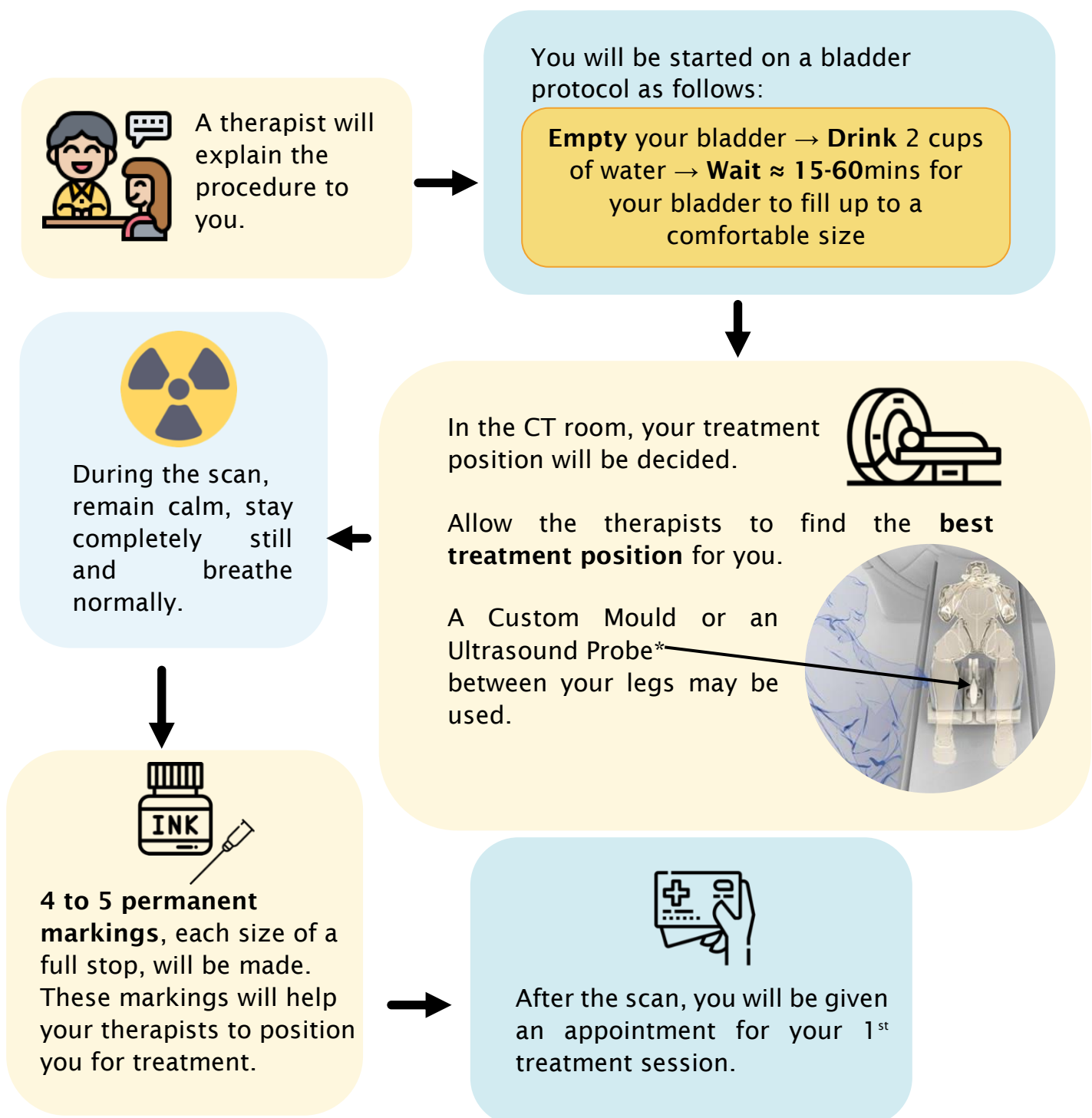
**Why Exercise?** Exercising helps to build your physical capacity reserves to improve tolerance for the treatment.

**Why is it important to stay hydrated?** Staying hydrated will help you achieve a good bladder volume to reduce the side effects of the treatment and improve treatment accuracy.

## 2. CT Simulation

During this session, you will meet with our team of Radiation Therapists who will determine the best treatment position for you and obtain a CT scan of the area to be treated.

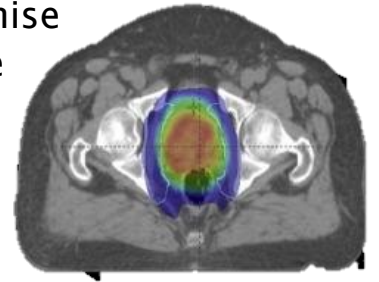
Please note that this scan is done in a particular fashion specifically for planning and treatment purposes, and may not be substituted with your prior CT scans.



### 3. Treatment Planning

Time is needed to generate a **precise and optimal plan** for your treatment. This is a complex process done by your Radiation Oncologist, Dosimetrist and Medical Physicist.

Computerised treatment planning is used to optimise high radiation dose to the tumour area, while minimising dose to the surrounding vital organs, like the bladder, rectum and bowels. Quality assurance checks on the radiation treatment plan will also be performed.



### 4. Treatment



**Monday to Friday** for **5 to 39 sessions** depending on your treatment regimen.



Allocate **1-2 hours** for your radiotherapy appointments.



**Regular Routine Reviews** with your Radiation Oncologist to monitor your treatment progress and manage side effects, if any.



## PREPARATION

- Your radiation therapist will inform you when to start your bladder protocol.
- An ultrasound may be done to measure your bladder volume before bringing you into the treatment room.



## POSITIONING

At the start of each session, the radiation therapists will position you in the same position determined at CT simulation. When your position is satisfactory, the therapists will leave the room.



## X-RAY IMAGING

- X-rays will be taken daily in the treatment room to monitor your position and treatment area.
- During this time, we will be looking at your bladder filling, rectum size, and the position of your prostate.



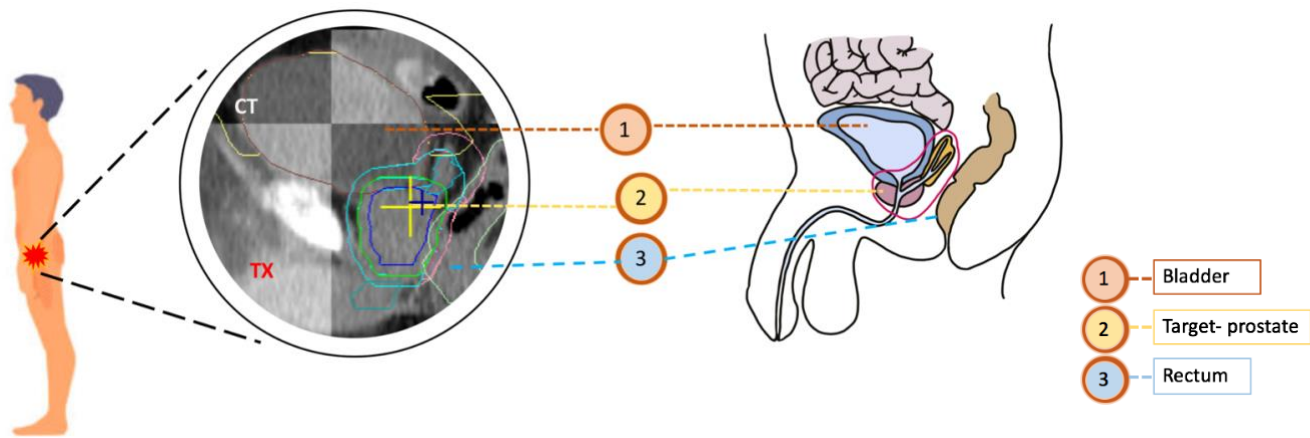
## TREATMENT

- The machine will rotate a few times around you, giving off a beeping sound.
- You will not feel anything and the **whole process is painless**.
- For safety reasons, do not sit up unless instructed by your therapists.
- You will be monitored by the radiation therapist from the console area. If you require assistance, **wave your hand** and they will attend to you immediately.



Urinary incontinence is common during treatment. Bring along an extra pair of bottoms or wear adult diapers for a peace of mind while you're out!

As the prostate is between the bladder and the rectum, the size of the bladder and rectum will affect your treatment outcome. **Ideally, the size of the bladder and rectum should be consistent with that on your CT simulation day as the treatment plan is based on those volumes.**



A large rectum or small bowel may result in treatment inaccuracy and increased radiation dose to your healthy tissues, which may result in more side effects. If there is a large amount of rectal gas or faecal matter, the position of the prostate and seminal vesicles may be affected. Similarly, if the bladder is too small, it is less effective in displacing the small bowels out of the radiation field.



This all seems to be a balancing game, but do not worry! Your therapist will speak to you to understand your lifestyle habits and help you achieve this.

# 5. Post-Treatment Follow-up

## Follow up appointments

You will receive a follow up appointment with your Radiation Oncologist after completing your course of radiation treatment. This is usually around 4 – 6 weeks after your last day of treatment.

It is important to attend the follow up appointment for your doctor to review you, as some side effects may not manifest until after the end of treatment.

If you have any concerns or do not feel well in the interim, please make an earlier appointment with your Radiation Oncologist by calling the NCCS Call Centre at **6436 8088** or go to the Emergency Department if necessary.

## How will I know that the cancer is gone?

At each follow-up appointment, you may be asked to do a blood test to check your level of **Prostate-Specific Antigen (PSA)**. PSA is the most accurate way of showing that the cancer cells in the prostate have been treated effectively. The PSA level typically takes 12-18 months after completing radiotherapy to reach its lowest point.

This means that we do not need to take a blood test from you in the first few weeks after the completion of your radiotherapy treatment. Your Radiation Oncologist will ask to see you in the outpatient clinic every year to review your PSA results. A rise in the PSA rate in the future would be an early warning sign that the cancer may have returned. Your doctor may order for other diagnostic tests if necessary.

# Treatment Side Effects

While undergoing radiation therapy treatment, you may experience side effects that are generally limited to the area being treated.

## Early Side Effects

Early side effects are those that occur during radiotherapy, typically 2 to 3 weeks after the start of treatment. These side effects are usually **temporary** and should show a gradual improvement in 8 weeks upon completion of treatment, although some may take longer to resolve. Here are some advice that can reduce your discomfort during the treatment.



### BLADDER IRRITATION

*Symptoms: Increase frequency to pass urine, sudden and strong urge to urinate, traces of blood in urine*

#### Advice:

- Stay well hydrated throughout the day
- Bring an extra pair of pants/underwear for treatment.  
Alternatively, wear adult diapers
  - Engage in pelvic floor exercises
  - Inform your doctor and therapist



### BOWEL CHANGES

*Symptoms: Diarrhoea, Rectal Bleeding (Blood in stools), Stomach Cramps, Bloating Pelvis*

#### Advice:

- Reduce intake of dairy products, high fibre food- fruits and vegetables
- Stay well hydrated
- Inform your doctor and therapist – Appropriate medication will be prescribed if necessary



### FATIGUE

*Symptoms: Increased Tiredness- commonly causes by daily commute, physical stress of being ill*

#### Advice:

- Continue daily activities in moderation
- Engage in exercises to build stamina
- Get ample rest



## SKIN CHANGES

*Symptoms: Skin sensitivity (especially around skin folds at scrotum and anus), Dry, Red & Itchy Skin*

### Advice:

- Gentle washing with non-perfumed soap around pelvis area
- If necessary, apply creams recommended by your doctor

## Late Side Effects

Late side effects may develop months or years after treatment. Hence, it is important to have long term follow-up appointments with your doctor.



## SEXUAL CONCERNS

*Symptoms: Infertility- reduced sperm count, Erectile dysfunction, Discomfort during sexual intercourse, Lower Desire to have intercourse*

As each person's body and treatment is unique, the onset and severity of side effects can vary between patients.

Please approach your Radiation Oncologist or Radiation Therapist for more information and advice on treatment side effects.



# Supportive Care

The diagnosis of cancer is often unexpected, tough to accept, and difficult to cope with alone. This is why your team of doctors and healthcare professionals are here to support you through your whole cancer journey.

## Medical Social Service, Department of Psychosocial Oncology

Please speak to your doctor if you feel that you need additional support. Your doctor will be able to refer you to our team of Medical Social Workers at the Department of Psychosocial Oncology. Our team of qualified Clinical Psychologists and Counsellors are well placed to provide you with the emotional and/or practical support you need during this difficult time. You may also reach them at **6306 1777** or **psychosocial@nccs.com.sg**.

## Cancer Helpline

If you prefer to speak to someone anonymously, you may contact our nurse counsellors via the NCCS Cancer Helpline. They can provide a listening ear and help to clarify any doubts and concerns. You may reach them at 6225 5655 or **cancerhelpline@nccs.com.sg**.

Please be assured that your conversations will be kept private and confidential.



# Common questions

## **Is radiotherapy painful? Will it make me “heaty”?**

No. Similar to taking an X-ray, radiotherapy treatment cannot be felt, does not cause pain and does not generate any heat in the body.

## **Is it safe to be with children, pregnant women, or the elderly?**

While X-rays are being delivered to the tumour in your body, your body itself does not become radioactive. You are not “radioactive” during or after the radiation treatment, and you may continue to enjoy the same contact with family and friends without any precautions.

## **Will the treatment cause me to lose my hair?**

Radiation therapy is a "local" treatment, which means it is directed only at the tissues of the chest area. Unless radiation is targeted at your head, you will not lose your hair from radiation.

# Useful Contact & Resources



**Appointment Scheduling:** 6436 8088

**General Enquiry:** 6436 8000

**Cancer Helpline:** 6225 5655

**Email:** [callcentre@nccs.com.sg](mailto:callcentre@nccs.com.sg)

## Internet Resources

**National Cancer Institute**  
[www.cancer.gov/cancertopics](http://www.cancer.gov/cancertopics)

**Macmillan Cancer Support**  
<https://www.macmillan.org.uk>

**American Cancer Society**  
[www.cancer.org](http://www.cancer.org)

**Singapore Cancer Society**  
[www.singaporecancersociety.org.sg](http://www.singaporecancersociety.org.sg)

## Scan for more information

RT Quick Guide +  
Prostate Prepared



Singapore Cancer  
Society



Medical Guidebook



SCS Prostate cancer videos



For more information on cancer, please call the

Cancer Helpline at Tel: 6225 5655  
or email [cancerhelpline@nccs.com.sg](mailto:cancerhelpline@nccs.com.sg)

MONDAYS - FRIDAYS : 8.30am to 5.30pm

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

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