

# **Low Dose Rate (Seed) Brachytherapy**

**Information for patients,  
families and friends**

## About this booklet

This booklet is for patients having a brachytherapy seed implant with Gippsland Radiation Oncology and the Melbourne Prostate Institute. It provides general information regarding the seed implant, to help you understand and prepare for your treatment.

**You may find it useful to bring this booklet with you to your appointments.**

### Contact Numbers - During Business Hours

General Enquires	+61 3 5173 8770
Radiation Oncologist	+61 3 5173 8770
Gippsland Radiation Oncology Nurse	+61 3 5173 8770

### After Hours or Weekends

CALL YOUR LOCAL HOSPITAL

#### **If you are unable to pass urine:**

**Private patients** – Contact your private urologist.

**Public patients** – During business hours contact Gippsland Radiation Oncology.

**Outside business hours go to your nearest emergency department.**

**Do not wait until morning if the problem arises at night.**

## Contents

1. What is the Melbourne Prostate Institute?	4
2. What is prostate cancer?	4
3. What is brachytherapy?	4
4. What is seed brachytherapy?	5
5. Preparing for a seed implant.	6
a) Flow rate	7
b) Volume study	7
c) Preadmission clinic	9
6. Admission to the hospital.	10
7. Diet instructions.	11
8. The seed implant.	13
9. Discharge medications.	14
10. Straining your urine.	15
11. Alert card.	15
12. After discharge from the hospital.	16
13. Post seed CT scan.	17
14. Follow-up.	17
15. PSA tests.	18
16. Side effects.	18
17. Radiation safety.	22
18. Survey forms.	23
19. Research.	24
20. Frequently asked questions.	24

## 1. What is the Melbourne Prostate Institute?

The Melbourne Prostate Institute, part of Alfred Health Radiation Oncology, is a team of highly experienced and specialised staff, utilising modern equipment and ensuring the best possible advice, treatment and follow-up for men with prostate cancer.

Melbourne Prostate Institute commenced seed implants after training in Seattle in 1998. To date we have successfully treated more than a thousand men from all over Australia, New Zealand, the Pacific and Asia.

## 2. What is prostate cancer?

Prostate cancer is a form of cancer that develops in the prostate gland. Most commonly, prostate cancer originates from glandular cells in the prostate. These cells make the fluid component of semen. Some prostate cancers can grow and spread quickly, however most are slow growing.

## 3. What is brachytherapy?

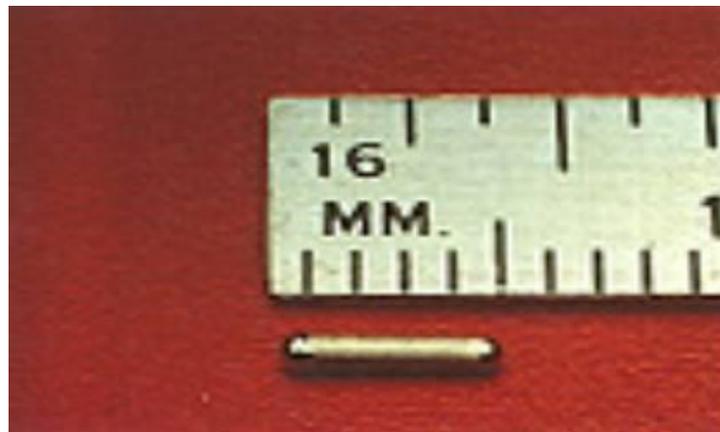
Brachytherapy is a form of radiation treatment in which a radioactive source is placed inside or near the area that requires treatment.

The radioactive sources used in prostate brachytherapy naturally decay and give off radiation in this process. This radiation is absorbed into the surrounding tissue.

## 4. What is seed brachytherapy?

Seed brachytherapy or low dose rate brachytherapy involves placing small radioactive seeds permanently into the prostate to administer radiation.

The seeds are tiny (0.8 mm x 4.5 mm) sealed titanium capsules containing radioactive Iodine-125. The seeds do not cause any allergic, inflammatory or immune reaction in the body and are chemically inactive. The seeds are not affected when having MRI scans.



The size of an Iodine-125 seed

When these seeds are placed in the prostate they can over time give off a high dose of radiation. Although the radiation dose in total can be very high, the rate at which the radiation is emitted is low, so this is why seed implants are sometimes called low dose-rate or LDR brachytherapy.

### How does it work?

The radiation damages the DNA (genetic code) of cancer cells in the treated area making them unable to grow or divide. As cancer cells are more sensitive to radiation than normal cells, the normal cells are able to repair some of the damage and survive.

## Who can have seed brachytherapy?

Many men who would be suitable for a radical prostatectomy could have seed brachytherapy but there are certain criteria that need to be met to help make the seed implant a success.

They are:

- Prostate cancer must be confined to the prostate or only spread a few millimetres from the prostate.
- PSA of 10 ng/mL or less.
- A pathology grade (Gleason Score) of 7 or less.

Men with very poor urinary flow are not suitable for seed implants because the urinary flow is affected. If the prostate is very large, a seed implant may be technically impossible.

## Why use seed brachytherapy to treat prostate cancer?

Over the last 15 years, seed brachytherapy and surgical removal of the prostate have had the same cure rate for men with prostate cancer. Many men prefer the side effect profile and the convenience of seed brachytherapy, compared with major surgery. Other men might have other medical problems that make surgery a bad choice.

## 5. Preparing for a seed implant

Before your seed implant there are three appointments you must attend to prepare for the procedure.

These are:

- a) Flow Rate
- b) Volume Study
- c) Preadmission

### a) Flow rate

You will be required to come to the department with a comfortably full bladder and pass urine into a machine which measures your urine flow rate. We look at the fastest speed of flow you can achieve while urinating. A fast flow rate reduces the likelihood of you having problems with urinating after the seed implant.

### b) Volume Study

The volume study is an ultrasound of your prostate used to plan your seed brachytherapy treatment. We do the volume study to determine the exact size and shape of your prostate and to ensure the seed implant is technically possible. The ultrasound images we record are used to plan exactly where we need to place the seeds.

The volume study is done four to eight weeks before your seed implant. You will be at Gippsland Radiation Oncology for approximately 3 hours on the day of the volume study; however the actual procedure only takes about 45 minutes.

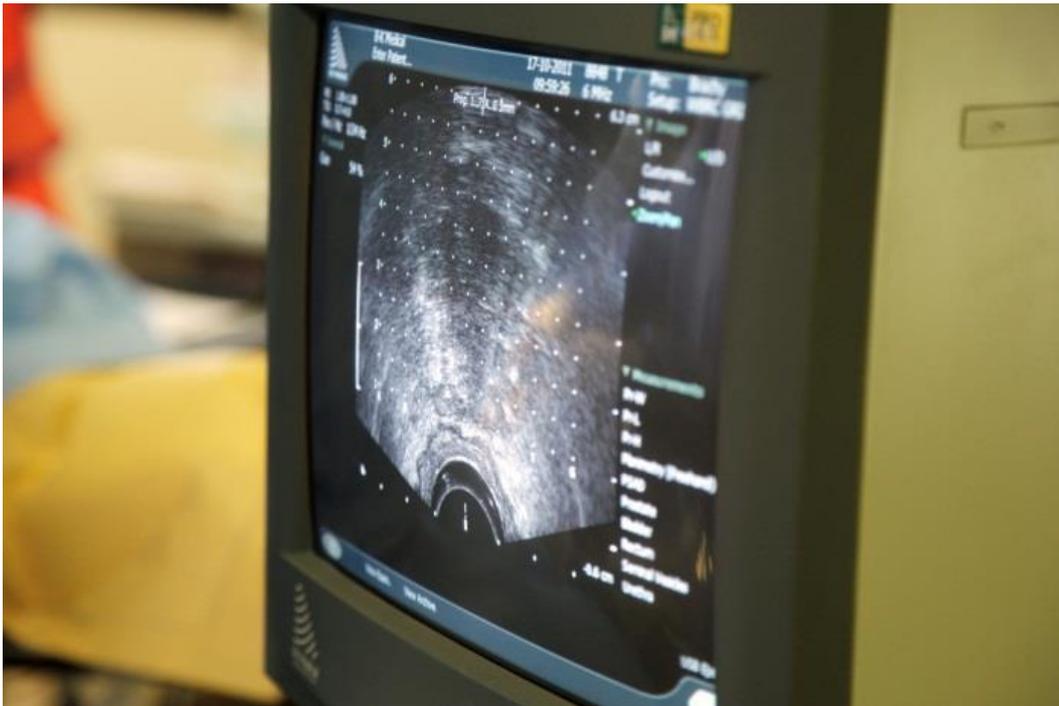
When you arrive in the department you will be given an enema to ensure that your rectum is empty prior to the volume study. You will also be given some medication to help you relax and reduce any discomfort. You will not be given general anaesthetic. The medication you receive will make you drowsy. It is important that you have a responsible adult to escort you home and that you do not drive for the rest of the day.

For the seed implant in theatre you will be positioned with your legs up in stirrups, so this is how you are positioned during the volume study.

Once you are positioned your doctor will clean the tip of the penis with some disinfectant and then put some local anaesthetic gel into the urethra.

This anaesthetic gel stings briefly and then makes the inside of the urethra numb. We then put some contrast gel into the urethra. This gel has small air bubbles mixed through it which makes the gel visible on the ultrasound images. This ensures your doctor can clearly see the urethra. This information is used to plan the seed implant so that the radiation dose the urethra receives is not excessive.

Your doctor places the ultrasound probe in the rectum (back passage) to obtain an image of your prostate and a series of ultrasound images are taken. You need to breathe normally and not move at all during this time. This part of the study takes about ten minutes. At the end of the volume study your doctor can show you the ultrasound images.



An ultrasound image of the prostate taken during the volume study

## **Planning**

After the volume study we will work out how many seeds are required to cover your prostate with the radiation dose and where they will be placed. Depending on the size of your prostate, we usually use between 80-120 seeds.

Once the plan is completed, your radiation oncologist will review and approve the plan. This process can take up to a week or so. Once approved, your seeds are ordered from the United States.

### **c) Preadmission clinic**

About two-four weeks before admission to hospital for your seed implant, you will need to complete preadmission. This will be conducted by the hospital where you will be having your seed implant. It may include a variety of tests and paperwork however is hospital dependent. The hospital will contact you to organise this.

## 6. Admission to the hospital

You will receive specific instructions from the hospital you will receive your seed implant at as to where to go at what time.

Date: \_\_\_\_\_

### Countdown instructions:

It is very important to prepare your bowel prior to the seed implant.

**14 days prior to admission:** \_\_\_\_\_

- Cease taking any drugs containing aspirin (Cartia, Astrix, Cardiprin or Asasantin) or any anti-inflammatory drugs.
- Paracetamol is fine to take for a headache.

**7 days prior to admission:** \_\_\_\_\_

- Stop antiplatelet drugs (such as Plavix, Clopidogrel, Iscover or Ticagrelor, Brilinta or Persantin).

**3 days prior to admission:** \_\_\_\_\_

- Commence low fibre diet (see page 11).
- Commence Tamsulosin (Flomaxtra) tablets once a day.

**1 day prior to admission:** \_\_\_\_\_

- Commence clear fluid diet (see second table on page 12).
- No solid food is allowed on this day.
- Take Picolax sachet in the early afternoon.
- Have nothing to eat or drink from midnight.

**On the day of admission:** \_\_\_\_\_

- Nothing to eat or drink including medications.
- Bring to hospital: toiletries, pyjamas, reading material and any medications you take.

## 7. Diet Instructions

### Low fibre diet – Please begin 3 days prior to admission.

	<b>Foods to include</b>	<b>Foods to avoid</b>
<b>Vegetables</b>	Peeled potatoes, pumpkin, mushrooms, carrots, beetroot, tomato paste.	All other vegetables including legumes e.g. baked beans, split peas.
<b>Fruit</b>	Strained fruit juices e.g. clear apple or blackcurrant juice. Tinned peaches, pears or apple. Bananas, honeydew, cantaloupe and peeled apples.	Dried fruits, unstrained fruit juices, all other fresh fruit and tinned pineapple.
<b>Dairy products</b>	Milk, cheese, yogurt – vanilla or natural, ice cream and custard.	Yogurt, cheese or ice cream containing fruit, nuts or seeds.
<b>Meat</b>	All meats e.g. beef, lamb, chicken or pork. Fish and seafood. Eggs.	Spicy meats e.g. curried. Fatty meats e.g. salami, sausages. Crumbed or battered fish, meat or chicken.
<b>Cereals</b>	White bread, crumpets, plain English muffins, plain cakes, biscuits or pikelets. Rice bubbles or cornflakes. White pasta, rice or noodles.	Breads: rye, wholemeal, multigrain, raisin, seeded or high-fibre. Cakes or biscuits containing fruit & nuts, or made with wholemeal flour. All other cereals.
<b>Miscellaneous</b>	Lollies, jelly, plain chocolate, butter, margarine, honey, vegemite, coffee, tea, cordial and soft drinks.	Nuts, peanut butter, jam or marmalade. Coconut. Popcorn, potato chips, pickles, relish. Chocolate with fruit or nuts.

**Sample menu of low fibre diet.**

<b>Breakfast</b>	Rice bubbles or Cornflakes with milk. Egg on toast. White toast with margarine and honey. Clear apple juice. Cup of tea or coffee.
<b>Morning tea</b>	Cordial, clear juice, tea or coffee. Plain sweet biscuit. Fruit e.g. banana, melon, peeled apple.
<b>Lunch</b>	Ham and cheese sandwich with white bread (margarine optional). Scrambled egg on toast. Fruit salad or melons, banana and ice cream. Vanilla yogurt. Cup of tea or coffee.
<b>Afternoon tea</b>	Soft drink, cordial, tea or coffee. White dry biscuit and cheese. Plain scone with margarine and honey.
<b>Dinner</b>	Poached eggs on white toast. Chicken, fish or meat with peeled pumpkin, carrot, mushrooms and mashed potatoes (or white rice, pasta or noodles). Canned apple or jelly and ice cream. Cup of tea or coffee.

**Clear fluid diet – Please begin the day before admission.**

<b>Soups</b>	Broth. Consommé (no vegetables or meat pieces).
<b>Fruit juices</b>	Strained apple juice. Blackcurrant juice. Cranberry juice.
<b>Other beverages</b>	Water. Tea or coffee with no milk. Carbonated beverages (including flavoured mineral waters lemonade etc.).
<b>Desserts/Sweets</b>	Jelly, hard boiled lollies, icy poles.
<b>Condiments</b>	Sugar. Salt.

## 8. The seed implant

### In the hospital

You will be admitted by the reception staff and prepared for theatre by the nurses. The anaesthetist will visit you in the waiting area, have a quick discussion and make an assessment. We prefer a general anaesthetic for a seed implant but it is the anaesthetist's decision.

During this period you will meet a whole range of staff in quick succession and many of them will check things related to safety, your identity, what you're having done, etc.

You will see your radiation oncologist just before you go to the theatre or in the theatre. There are a lot of people in the theatre, including your urologist, the brachytherapy radiation therapist, a physicist, a scrub nurse, a circulating nurse, an anaesthetist, the radiation oncology registrar and a theatre technician.

After you are anaesthetised we will implant the seeds according to your specific plan. The procedure will take approximately 1–1.5 hours.

Staff in the operating theatre performing a seed implant.



## After the seed implant

After the operation you will be taken to the recovery room and observed until the staff are happy for you to be taken back to the ward. After the general anaesthetic you may be groggy, feel nauseous or have a sore throat.

Before you leave the ward to go home you must be able to perform some vital bodily functions such as walking, talking, eating and passing urine. This takes quite a few hours in most cases. The laxative to clean out the bowels and the restriction on fluids before the operation can make you feel dry and the kidneys will not make very much urine quickly. For this reason we encourage you to drink a lot of water.

A small proportion of men will have a catheter after the operation to drain the urine and this can be uncomfortable. If you have a catheter, we try to take this out as quickly as possible, so that you can pass urine that afternoon and get home. Sometimes there is blood in the urine and the catheter is left in until this clears up.

## 9. Discharge medications

The following medication prescriptions will be given to you before leaving the ward:

### **Tamsulosin (Flomaxtra) 0.4 mg**

Flomaxtra is a prostate-specific drug that helps improve the strength of urine flow by relaxing the muscles in the bladder and urethra. You will begin taking Flomaxtra three days before your seed implant and will continue for at least three months after. One tablet is taken daily, at any time, with or without food. Please continue to take Flomaxtra until your doctor tells you to stop.

## **Paracetamol (Panadol) or Paracetamol with Codeine (Panadeine)**

These are over the counter pain medications. Take two tablets every four hours as needed if you have pain. These may be taken with Naprosyn. The codeine in Panadeine may cause constipation. Do not take more than eight Panadeine or Panadol tablets per day without first talking to your doctor.

### **10. Straining your urine**

After your seed implant, every time you go to the toilet you need to strain your urine. This must be done for two weeks using a small strainer kit which you will receive before you leave hospital.

If you notice a seed do not touch it. Please retrieve it using the cotton buds provided and place it in the lead pot.

Please keep the lead pot in a safe place and return it to Gippsland Radiation Oncology when you attend for your post treatment CT scan, whether you have collected a seed or not. The rest of the strainer kit can be discarded. If you lose a seed or two, don't worry. It won't make a big difference to the dose received by the prostate.

### **11. Alert Card**

We will give you an alert card to keep with you at all times, so if you are involved in an accident or become suddenly unwell, doctors looking after you will know that you have had a seed implant. There is also important information on the back of the card should you require a colonoscopy in the future.

The seeds do not have enough metal in them to set off the metal detectors in airports. We have had cases where a patient travelled to the United States very soon after the seed implant and was identified by radiation sensors. This is extremely unlikely to occur in Australia or around the world once two months has passed since the implant.

## **12. After discharge from the hospital**

The Gippsland Radiation Oncology nurse will call you after discharge to check on your progress. If you have any worrying or unexpected problems, the nurse can arrange an appointment with your radiation oncologist or urologist. You can always call us if you have any problems.

The nurse will review you three months after your seed implant over the phone. If you have any problems, your doctor will be contacted. At this time you will be asked to have a PSA blood test and we will receive a copy of the results.

Our nurse is contactable during business hours (8:00am – 5:00pm Monday to Friday).

If you are unable to pass urine or have any other urgent problems out of work hours, go directly to your nearest emergency department.

Most men can get back to their normal activities within a day or so of the procedure, however it is important not to do any heavy lifting or strenuous activity for at least a month after the implant.

### 13. Post seed CT scan

Approximately 30 days after your seed implant, you will be required to attend a CT scan appointment at Gippsland Radiation Oncology. We do this CT scan to calculate the actual radiation dose delivered to the prostate from the seeds. Your radiation oncologist will be there to check up on how you are going after the implant.

We also record the radiation dose received by the urethra and rectum. Your radiation oncologist will inject some local anaesthetic and contrast into the urethra to visualise the urethra clearly on the CT scan.

All the seeds implanted must be accounted for, so it is important you return the lead pot you received at your seed implant, regardless of whether you retrieved any seeds or not.

On the same day you will have a chest and pelvic x-ray at Radiology. These x-rays help us to account for all the seeds.

### 14. Follow-up

For the first two years follow-up with your radiation oncologist and urologist is done six monthly. At the 6 month mark you will see your urologist and the 12 month mark your radiation oncologist and so on. After two years you will be seen annually. If necessary, you are able to see your doctors more frequently.

## 15. PSA tests

The most sensitive way of monitoring your response to treatment is by following the PSA blood test. Prostate cancer responds progressively, but slowly, after the course of treatment. The PSA will decline, but may not disappear because the prostate is still present and continues to make a small amount of PSA.

During the first year after your seed implant you will be asked to have a PSA blood test at 3, 6 and 12 months after the date of your implant. You will then have the blood tests annually.

## 16. Side effects

Below is a list of the most common side effects associated with seed brachytherapy for prostate cancer. Side effects may not be limited to the following, so if you have any concerns please speak to your radiation oncologist.

Side effects can be divided into three groups:

- Immediate – Those which happen in the hours or days after treatment.
- Short term – Those which happen 10 days to a year or so after treatment is completed.
- Long term – Those which happen years after treatment is completed.

### Immediate side effects

#### Discomfort

- Discomfort in the pelvis, back passage and the area between the legs.
- Bruising of the scrotum or penis.

## General

- Nausea – The anaesthetic might make you feel sick like you want to vomit.
- Tiredness.
- Muscle aches and pains.
- Blood in semen.
- Infections – Are very uncommon and are prevented by the antibiotics given in theatre.

## Urinary

- You may feel dry and be slow to make urine after the laxative and restriction on fluids before the implant. You will be encouraged to drink a lot of water and most men can typically pass urine by the afternoon (for a morning seed implant).
- Blood in urine for a day or so.
- Occasional blood clots.
- Difficulty passing urine – One in twenty men will be unable to pass urine after the seed implant. In this case we would insert a urinary catheter to drain the urine. This is usually temporary, with the catheter removed the next morning. If you were still unable to pass urine we would send you home with a catheter and ask for you to return to the hospital a week later to remove the catheter.

## Short term side effects

Generally these side effects are worst at one to three months after treatment and then improve. These side effects are caused by the effect of the radiation.

## Urinary

- Discomfort with urination and sometimes for a while afterwards.
- Discomfort at the end of the penis.
- Abnormal urine flow – Due to bruising and swelling in the prostate.
- Difficulty passing urine.
- Frequency – Needing to pass urine more often.
- Urgency – Needing to pass urine in a hurry.
- Nocturia – Needing to pass urine at night.
- Urinary obstruction – Would require a catheter. Please see your urologist or go to an emergency department if this happens.

## Bowel

- Occasional blood in bowel motions.
- Constipation or diarrhoea.

## Long term side effects

Long term problems after seed brachytherapy are not common. Most men will return to their pre-treatment state 1-2 years after treatment.

## Urinary

- Urethral stricture – Narrowing of the tube through which the urine flows out from the bladder. This is uncommon but might require stretching by a urologic surgeon.
- Irritable bladder – The bladder is abnormally sensitive to filling, resulting in the need to pass urine frequently and in a hurry. There can also be associated penile discomfort. This is very uncommon and can be helped with simple medication.
- Urinary leak or incontinence – Is very uncommon and usually associated with irritable bladder.

## **Bowel**

- Frequency and urgency of bowel motions and/or mucous or blood to be mixed with bowel motions.
- Rectal ulceration – Very uncommon.
- Rectal fistulas – Very rare.
- If bowel problems persist it is important to investigate properly to make sure there is no sinister underlying cause.

Treatments for bowel problems are available but it is vitally important that you contact your radiation oncologist prior to having a colonoscopy or any procedures done by another doctor, such as a colorectal surgeon or gastroenterologist. This will allow us to alert the other doctor as to the potential for problems.

It is particularly important for the following:

- Procedures on the rectal wall adjacent to the prostate.
- Biopsies of unusual looking problems on the bowel wall.
- Treatment for bleeding from the bowel wall.
- Biopsies of the prostate through the bowel wall after a seed implant.
- Colonoscopy.

## **Sexual**

- Impotence (erectile dysfunction) – There may be a period after seed brachytherapy when men are temporarily impotent. It is thought in general terms, that of men who are fully potent prior to treatment, 60-70% will regain and maintain this.
- Discomfort with ejaculation.
- Decreased volume of ejaculate – Is common.

## 17. Radiation safety

Items you touch or use are not radioactive. Likewise, your semen and bodily fluids are not radioactive. The radiation exposure outside your body from seed brachytherapy can be measured, but is very small. Even though these levels are low and of no concern, we ask you to take reasonable measures to minimise this dose to others.

If you are sexually active in the two weeks after your seed implant please wear a condom. This is a precautionary measure as it is possible that there may be a seed present in your ejaculate.

Any pregnant or possibly pregnant women should avoid prolonged intimate or close contact with you for the first two months after a seed implant. Pregnant women should not hug or sit next to you for more than a few minutes. A pregnant woman can greet you briefly and then move to a distance of two metres (six feet) or more away. At this distance, there is no limit to the length of time she can be in the same room as you.

Children should not be allowed to sit on your lap during the first two months after the implant. They can sit next to you with no time limit, as the radiation dose at the side of the body is much less than at the front.

In the unlikely event that men pass away in the two years following the seed implant, the body should be buried and not cremated. This is to avoid the dispersion of the radioactivity into the environment. We request that you document this in a will or ask a relative or next-of-kin to ensure that this occurs. The next-of-kin can then contact the physicists at Gippsland Radiation Oncology for advice if necessary.

## 18. Survey forms

We are continually trying to improve our treatments and reduce side effects. To do this we need to understand the side effects experienced by our patients.

We use standardised, patient completed survey forms for assessing the short and long term side effects of our patients. This allows us to compare your results over time and make comparisons with other men.

The survey forms ask questions about urinary, rectal and sexual function at various time points:

- Day of discharge after implant
- One month after implant
- Three, six, twelve and eighteen months after your implant
- Annually there-after

Most men have only minor things come up but some may have a number of problems. Regardless of which category you fall into, please take the time to complete the forms, as we really value the information we are able to gain from them.

In addition to helping us better understand how you are going, this information may be the basis for future research. Our data manager records and manages this information in a secure database and no personal details are divulged. If you have any concerns about this information please speak with your radiation oncologist.

## 19. Research

The Melbourne Prostate Institute is committed to improving brachytherapy techniques for the treatment of prostate cancer. Our dedicated team of radiation oncologists, physicists, radiation therapists, nurses and data managers work together to analyse a large quantity of data related to treatment, clinical outcomes and quality of life.

Our team has published many journal articles and presented research work at many conferences in Australia and overseas. We continue to be a leader in clinical brachytherapy research in Australia, with the main focus on improving clinical outcomes for our patients.

## 20. Frequently asked questions

### **What should I do if I cannot pass urine?**

During business hours private patients should contact their private urologist and public patients should contact the Gippsland Radiation Oncology. If it is outside business hours, please go to your nearest emergency department. Please do not wait until morning if the problem arises at night.

### **What can I expect after seed brachytherapy?**

At 5 years 96% of all men treated at Melbourne Prostate Institute are free of any signs or symptoms of prostate cancer. At 10 years 90% of all men treated are free of disease.

## **How does seed brachytherapy compare to radical prostatectomy, in terms of being free from prostate cancer?**

Seed brachytherapy offers equivalent outcomes to that of surgery, including robotic surgery.

## **Would surgery be a better treatment choice because I can always have external beam radiation therapy as a backup if the cancer comes back?**

We don't think it is a good idea to go through all the trouble and cost of both surgery and radiation therapy, just to achieve the same chance of long-term cure as with a seed implant alone.

## **Can you see the prostate cancer of the ultrasound images taken at the volume study?**

We cannot reliably see the cancer with the ultrasound images. The main lump or nodule may look obvious, but typically prostate cancer is found in much of the gland. It is for this reason we treat the whole gland, plus a small margin.

## **Is there anyone I can talk to who had a seed implant at The Alfred?**

We have a list of past patients who are willing to be contacted over the phone to discuss their experiences of seed brachytherapy. If you would like to be put in contact with one of these past patients, please speak to your radiation oncologist.

## **Is family history a risk factor for prostate cancer?**

Prostate cancer seems to run in some families, which suggests there may be an inherited or genetic factor. Having a brother or father with prostate cancer doubles your risk of developing prostate cancer.

## **What is PSA?**

PSA is Prostate Specific Antigen. It is an enzyme made predominantly in the prostate and is found in semen. A small amount of PSA leaks back into the blood and can be measured with a blood test.

## **Why can PSA be elevated in the blood test?**

It will be elevated if more of it is made or more leaks into the bloodstream. Things that will cause this are benign enlargement of the prostate, prostate infections, inflammation or injury and prostate cancer.

## **If my PSA is elevated, does this mean I have prostate cancer?**

No, it might be due to any of the causes listed above. The only definitive way to diagnose prostate cancer is a biopsy.

## **What happens to the PSA after radiation treatment to the prostate?**

It gradually falls over the course of a year or more, down to low levels.

## **What will happen to my PSA after a seed implant?**

At 10 years, the vast majority of men have the PSA fall to less than 0.2.

## **What happens to PSA in the long-term after curative radiation treatment?**

It will be low but detectable because you still have a prostate. It will fluctuate up and down by a small amount because of the natural variation in the test result.

## **Does PSA always continue to decrease?**

Not necessarily. The PSA may increase over a previous lower level for a number of reasons, including the day-to-day variation in all men's blood. Also, the test to determine the PSA concentration varies slightly between different laboratories.

## **What is a PSA bounce?**

A PSA bounce is a phenomenon, probably caused by one of the non-cancer related prostate conditions, which occurs after men have had a seed implant. It occurs after a steady and prompt decline in PSA for a year or so before it increases again, sometimes for a year or so before decreasing steadily again.

About one third of men will have a PSA bounce of 1 ng/mL or less. However, almost 5% of bounces will be more than 2 ng/mL. 80% of bounces occur before the third year anniversary of the seed implant and about 20% occur later. Occasionally they occur after the 6th year anniversary. The bounce usually starts declining a year after the first bounce level.

## **How can the PSA tell if the cancer has reoccurred?**

If the PSA shoots up suddenly to a very high level, it can be suggestive of problems. Around one in three men will have minor upward bounces which later turn out to be nothing to worry about.

## **What does biochemical recurrence mean?**

It is a definition used for study purposes. It means the PSA has gone down to low levels and then increased to more than 2 ng/mL and stayed up.

## What happens after a biochemical recurrence?

In most men it is an early sign that their prostate cancer was not totally cured by the radiation treatment. Men usually remain well for many years and would not usually have any problems caused by prostate cancer. For at least 5 years after biochemical failure, men are no more likely to die from prostate cancer than other men who do not have a biochemical failure.

## What treatment is given for biochemical recurrence?

There is no specific answer and depends on multiple factors, such as:

- The speed of PSA increase
- The level of PSA
- The initial PSA level before treatment
- The initial grade of the tumour prior to any treatment
- The presence of any symptoms
- The patient's age
- The time since initial treatment
- The patient's perspective
- The doctor's intuition

Hormone treatment would be recommended after biochemical recurrence but often not immediately and in some cases not for years.

Currently there are no proven salvage treatments that will give a reasonable prospect of a second chance of cure in men who have persistence or recurrent prostate cancer. There are many experimental approaches such as surgery, cryotherapy or re-irradiation, but none have a high rate of cure and all have a high rate of unpleasant long term side effects.

## **What happens to my PSA after treatment with hormones?**

In greater than 99% of cases the PSA drops to low levels as the prostate cancer regresses under the influence of the treatment. Prostate cancer will remain in regression for an average of two years before it starts to regrow, uncontrolled by the hormone treatment.

## **This is very overwhelming, are there other people I can talk to?**

At Alfred Health Radiation Oncology we have psychology and psychiatry services available to our patients. Please speak to your radiation oncologist if you would like a referral to these services.

The Cancer Council of Victoria has valuable resources and people to talk to who have had prostate cancer. They can be contacted on 13 11 20 or visit their website [www.cancervic.org.au](http://www.cancervic.org.au).





## **Alfred Health**

Radiation Oncology  
55 Commercial Road  
Melbourne VIC 3004  
T 03 9076 2337  
F 03 9076 3465

[alfredhealth.org.au](http://alfredhealth.org.au)

## **Further information:**

### **The Alfred**

[alfredhealth.org.au](http://alfredhealth.org.au)

### **Alfred Health Radiation Oncology**

[alfredhealth.ro](http://alfredhealth.ro)

### **Latrobe Regional Hospital**

[lrh.com.au](http://lrh.com.au)

### **Melbourne Prostate Institute**

[melbourneprostate.org](http://melbourneprostate.org)

### **Cancer Council Victoria**

[cancervic.org.au](http://cancervic.org.au)

If you would like to provide feedback or request a copy of this information in a different format, contact us at [patient.information@alfred.org.au](mailto:patient.information@alfred.org.au)



First Published March 2013. This Edition January 2017.

AHRO Patient Information by Alfred Health Radiation Oncology is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License



Developed & reviewed  
by our consumers

Prompt Doc No: AHG0002217-v1.0  
Approval Date: 14/08/2017  
Review & Update by: 09/05/2019