Low Dose Rate (LDR) Seed Brachytherapy for Prostate Cancer

Patient Information
Genesis CancerCare Newcastle

Genesis CancerCare Newcastle is a state of the art radiotherapy centre co-located on the Lake Macquarie Private Hospital campus. It provides both public and private patients in the area with much needed immediate access to comprehensive cancer treatments and diagnostic assessments.

Technology and treatment available

- Intensity Modulated Radiotherapy (IMRT) & Image Guided Radiotherapy (IGRT)
- VMAT: Volumetric Modulated Arc Therapy
- Low Dose Rate Brachytherapy (LDR) for prostate cancer (permanent radioactive seed implant)
- 3D Conformal Radiotherapy
- Comprehensive cancer treatment as part of the Hunter Cancer Centre. Encompassing Medical Oncologists, chemotherapy treatment and support services (www.huntercancercentre.com.au)

The LDR program

The LDR seed program was launched in 2014, in conjunction with the opening of Genesis CancerCare Newcastle. The program allows men in the Hunter and surrounding regions easier access to LDR seed implantation and follow-up closer to home. The program is based in Newcastle at Warners Bay Private Hospital, and patients are seen at Genesis CancerCare Newcastle in Gateshead.
What to expect – Prostate Low-Dose Rate (LDR) Brachytherapy

Step 1: Initial consultation
Before you proceed to treatment, your Radiation Oncologist will explain the brachytherapy process and answer any questions you may have. Discussion will also include any other treatment options as well as the potential short or long term side effects. An examination may be required at this appointment, along with review of any relevant x-rays, scan and test results.
LDR seed implantation is ideal for men who have a small prostate less than 45cc, PSA less than 10, Gleason score less than (or equal to) 7 and minimal urinary symptoms. Your next appointment will be for a prostate volume study.

Step 2: Formal Volume Study
This is an important step in the prostate brachytherapy process, where the size of the prostate is measured and evaluated for treatment suitability. The procedure involves a short general anaesthetic and uses a trans-rectal ultrasound for image gathering. This procedure takes approximately 30 minutes and is a day only procedure.
The volume study requires the co-ordinated efforts of a multi-disciplinary team; urological surgeon, radiation oncologist, anaesthetist, nurse, radiation therapist and medical physicist. This will be performed at Warners Bay Private Hospital. Once you are asleep, a urinary catheter is inserted into the bladder through the penis for image visualisation. The procedure involves the positioning of the prostate gland and urethra guided by trans-rectal ultrasound and a calibrated reference template so that a series of ultrasound images can be captured.
If the prostate is a suitable size, serial ultrasound images will be taken and contoured in anticipation of planning the implant and ordering the seeds. If the prostate is too large, hormone therapy may be recommended to shrink the prostate and the volume study repeated in a couple of months’ time. Otherwise an alternative treatment option may be recommended, i.e. external beam radiotherapy.

Step 3: Treatment planning
This step is performed without the patient present. The information gained from the ultrasound scan in step 2 is used by your radiation oncologist, with the assistance of the radiation therapist and the medical physicist, to develop an accurate and customised treatment plan. Every plan is unique and tailored to the specific requirements of each patient. Once the treatment plan has been completed, approved by your radiation oncologist and had all required checks completed, the seeds for the treatment implant are ready to be ordered.
The brachytherapy implant is scheduled for 4-6 weeks from the date the order is placed. This is because each set of radioactive seeds are made to order overseas.

Step 4: Brachytherapy implant
This is a day only surgical procedure that will be performed at Warners Bay Private Hospital, utilising the same multi-disciplinary team who were present at the volume study.
Once again, this is performed under general anaesthetic with a urinary catheter inserted into the bladder. The procedure involves the insertion and deployment of needles containing the radioactive seeds into the prostate gland through the perineum (area of skin between anus and scrotum), guided by trans-rectal ultrasound and fluoroscopy. The insertion may take up to 2 hours.

Step 5: After implant
After the procedure you will be given care instructions, and a lead pot and a urine strainer will also be provided before your discharge.
A follow up appointment will be made with the radiation oncologist the day following the implant at Genesis CancerCare Newcastle. A follow up CT scan will be scheduled for a months’ time to check the seed placement (see below for more details).

Step 6: Follow up
After the implant procedure you will have a follow up appointment scheduled for the next day to see Dr Capp where you will be provided with any scripts that may be required. You will also be scheduled for a CT scan 4 weeks after the implant at Genesis CancerCare Newcastle, which will be used to evaluate the success of the implant. On some occasions it may be required for more seeds to be inserted. Dr Capp will then see you once more with a repeat PSA test and the results of the implant 2 weeks after the CT scan. Ongoing follow up will be discussed at that appointment.

Bowel Preparation
For both the Volume Study and the Implant procedures you will be required to have a bowel preparation procedure. **You will be required to purchase Glycerol suppositories from a chemist. Follow the directions on the pack and use on the evening prior to the procedure.**

You will receive a phone call from Warners Bay Private Hospital with the fasting instructions and time for admission on the day prior to the procedure. Once admitted you will be instructed by the nurses to have a Microlax enema and this will ensure your bowel will be empty for our ultrasound imaging.
Possible Side Effects

Immediately after the LDR seed implant

- You may notice a burning sensation when passing urine, when the catheter has been removed.
- There may also be some blood in the urine. This is to be expected and you can help by drinking plenty of water to help flush your bladder.
- You may have some discomfort and bruising in the perineal area.

You will be given a script for Flomaxtra® at your appointment the day after the implant. If you experience difficulty emptying your bladder or a poor stream, you should commence Flomaxtra® as prescribed. On rare occasions, complete blockage may occur. If this occurs you will need to see your Urologist or go to the Emergency Department. It is also common to have some bruising in the area of the implant or feel fullness when you sit. Take simple analgesics such as Panadol® or Panadeine® if you have discomfort.

Short term side effects

As the bruising and swelling from the implant procedure subsides, the radiation reaction from the seeds begins to build, and may become noticeable anything from 2 to 6 weeks after the implant.

On average, the reaction may persist at this level for between 1 and 4 months and then begins to decrease in severity. This may include a range of symptoms described below:

- Frequency and urgency of urination
- Poor flow which is slow to start
- Burning sensation during urination
• Occasional uncontrolled urine leakage if you are unable to reach a toilet in time.
• Some (approx. 5%) of men get acute retention of urine and need to have a catheter. This is when you cease to pass urine at all, and your bladder becomes uncomfortably full. If this occurs, you should contact your GP or local hospital immediately.
• Pain at the tip of the penis.
• A more frequent urge to open the bowels (due to pressure from inflamed prostate).
• Sometimes you may feel as though you are constipated, this could be the result of the prostate swelling. A high fibre diet and drinking more fluids can be helpful in easing this.
• Rectal discomfort/bleeding. If you are very concerned, contact us. You will be monitored closely but this usually settles down without treatment.

These symptoms may not all occur, will vary in severity, and will last on average for between 6 and 8 weeks. After this time, most men notice a marked improvement, although it can take up to a year for some of the irritative urinary symptoms to resolve.

**Long term side effects**

Months to years after the LDR seed implant:
• Erections may lessen over time
• Semen volume will decrease and blood staining/discolouration may be seen
• Small risk (1-3%) of urethral stricture long term
• Small risk (less than 1%) of rectal irritation (proctitis) long term
• Fatigue, which may last up to 4–6 months

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**The Seeds and Radiation Safety**

The Iodine-125 seeds used for LDR emit only low energy radiation and very little radiation penetrates outside of the prostate gland. Due to the nature of the decay processes that generate the radiation from the Iodine-125, the amount of radiation emitted from the seeds will slowly decrease over a period of time until, eventually, the seeds will no longer be considered radioactive.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANS) have determined that this period is approximately 20 months for the Iodine-125 used in your treatment. The type and amount of radiation involved does not constitute a danger to people you will generally come into contact with during that 20 month period and general radiation safety precautions are
not required EXCEPT in the case of children, pregnant women and your spouse.

Children should not be allowed to sit on your lap for 6 weeks after your implant.

Any pregnant or possibly pregnant woman should avoid prolonged contact with you in the first two months. She should not hug you or sit next to you. She can greet you briefly and then move to a distance of at least one metre. At this distance, there is no limit to the length of time she can be in the same room.

For your spouse/partner, refrain from sex for two weeks following your implant. You may then resume normal sexual activity after this time period, providing you use a condom for a period of two weeks.

You will also be required to strain your urine for 1 week after your implant in the event you pass a seed. Please place any loose seeds in the lead container provided using tweezers or a spoon and store in a safe and inaccessible area at home. Return the seed/s to Genesis CancerCare Newcastle at the first available opportunity.

You may go about your daily activities, sleep in the same bed, etc. with no special arrangements necessary. The implanted Iodine-125 seeds are sealed in a titanium casing; so there are no contamination problems.

Your breath, sweat and body fluids do not contain any radioactivity and will not contaminate anybody. Your linens, clothing, dishes and toilet facilities may be cleaned and used by others without any special precautions.

After the implant you will receive a discharge letter and 2 wallet sized cards indicating you have had radioactive seeds implanted into your prostate. They will indicate the type of seeds, the activity level, radiation safety instructions (similar to those above) as well as who to call to report any concerns, or for another health professional to gather more information regarding the seed implant.

You will be required to carry the wallet sized cards with you for the duration of seed activity (approx. 20 months) and if you are hospitalised within 16 weeks of the implant you will be required to notify the personnel on the card.
Free Parking
Free patient parking, including disabled, is available at the front entrance of the department along with a patient drop off and pick up zone.

Transport
Public bus route with stops on the Pacific Highway.

Contact us
If you have any questions, please contact us using the details below and ask to speak to a Brachytherapy team member:

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