

# High-Dose-Rate Brachytherapy for the Treatment of Prostate Cancer

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## Introduction

Prostate cancer is the most common cancer diagnosed in men in the United States. In its early stages, it usually grows slowly. There are a number of ways to treat this tumor.

One way to treat prostate cancer is to combine two forms of treatment. External beam radiation comes from a machine outside the body. High-dose-rate (HDR) brachytherapy places radioactive material in the prostate gland for a short time. These two treatments can be alone or combined. Your doctor will explain your options to you.

This booklet describes HDR brachytherapy and its possible side effects. Follow the instructions at the end of the booklet. They guide you through the preparation for your procedure and hospital stay. Please review them carefully.

## The Prostate Gland

The prostate gland is about the size of a walnut. It is found only in men, and it produces some of the seminal fluid that protects and nourishes sperm cells. When you are standing, it is located in front of the rectum and behind the scrotum. It is just under your bladder and surrounds the upper part your urethra, the tube that carries urine and semen out of the penis.

The skin between your scrotum and anus is called the perineum. When you are lying on your back with your legs raised, your prostate gland lies directly behind your perineum.

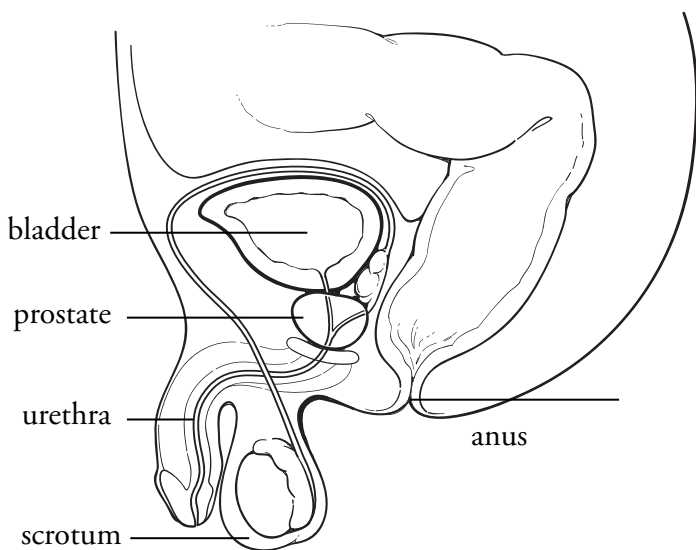


Figure 1: Structures near the gland

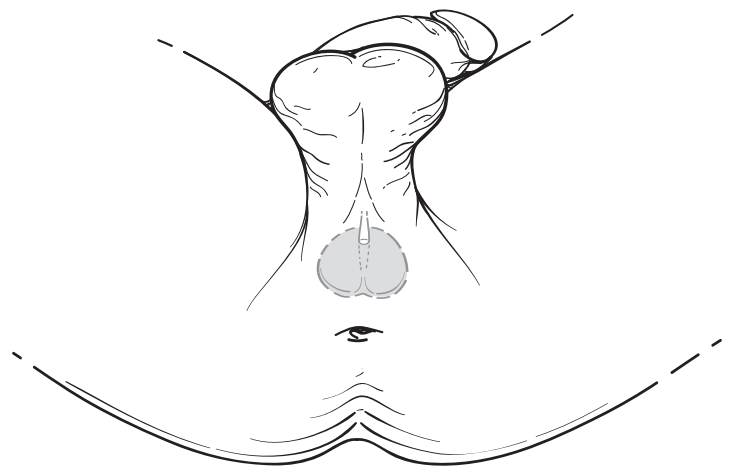


Figure 2: Illustration of the perineum, dotted illustration of the prostate

## Preparing for HDR Brachytherapy

Before your brachytherapy procedure, there are a number of things you must do.

- You will be scheduled for an appointment for Pre-Admission Testing. During this visit you will meet with a nurse practitioner and have some tests. These include a routine blood test, a chest x-ray, and an EKG.
- You will receive the booklet, Getting Ready for Surgery. It describes the general procedures.
- Aspirin, non-steroidal anti-inflammatory drugs, and vitamin E can cause bleeding. You will receive a card with the names of medicines you cannot take and for how long. It also has the names of medicines you can take instead.
- If you are taking blood thinning medicines such as warfarin (Coumadin®) or heparin (Innohep®), please let your doctor know.
- Tell your doctor or nurse if you are taking any other medicines, including:
  - medicines that do and do not require a prescription
  - herbal remedies
  - vitamins
  - dietary supplements

Some of these may interfere with anesthesia.

- Someone from Admissions will call you the day before your procedure. You will be told where to go and when to arrive.
- Your bowels must be empty. Begin the bowel preparation the day before the procedure. The preparation you need is described below. Follow the directions for it.
- Two days before your procedure, buy the HalfLytely® Bowel Prep Kit at any pharmacy. Your doctor will give you a prescription. The kit has:
  - Four 5-mg tablets of bisacodyl
  - HalfLytely powder in a 64-oz bottle plus flavor packets (lemon-lime, orange, cherry)
- Get instructions from your doctor if you have:
  - Had kidney failure.
  - Congestive heart failure.
  - Diabetes.

You may need to take some precautions.

### One Day Before Your Exam

- Eat your usual breakfast.
- Do **NOT** eat any solid food for the rest of the day. Start the clear liquid diet on page 6.
- Drink four, 8-ounce glasses of clear liquids for both breakfast and lunch. You may **NOT** have milk and milk products.
- Do **NOT** drink anything that is red or purple in color.
- Limit caffeinated beverages to two cups. Do **NOT** drink alcohol.

- Do **NOT** drink diet liquids, even if you are a diabetic. You will become weak and dizzy if you just drink water or low-calorie drinks.

**At 3:00 p.m.**

- Take all four bisacodyl tablets by mouth with a glass of water.
- Mix the HalfLyte solution as follows:
  - Add lukewarm drinking water to the top of the line on bottle.
  - You may add a flavor packet provided with the HalfLyte kit.
  - Close the bottle with its cap and shake the bottle to dissolve the powder.
  - The mixed solution will be clear and colorless even if you added a flavor packet.
- You may put the mixed solution in the refrigerator. Patients have told us that it tastes better chilled.

**At 5:00 p.m.**

- Do **NOT** take other laxatives or more than the dosage given here. Serious side effects can occur.
- Drink all of the solution as follows:
  - Drink one 8-ounce glass every 15 minutes, for a total of about 8 glasses.
  - Drink each glass quickly. Do not drink small amounts continuously.
- Bloating, nausea, and vomiting can occur. You must try to finish the entire bottle of HalfLyte.
  - If you feel bloated, drink each 8-ounce glass of HalfLyte at longer intervals than 15 minutes.
  - If you have nausea and vomiting, wait about 30 minutes and then try to finish drinking each dose of the solution.
- Bowel movements usually begin within 1 hour of drinking the first dose.
- Apply Vaseline® or A & D® ointment to the skin around your anus after every bowel movement. This helps prevent irritation.
- You may continue to drink clear liquids until 12-midnight, but it is not required.
- Do not eat or drink anything after 12-midnight. You may take any medicines that your nurse or doctor have told you to take. Take them with a small sip of water.

## Clear Liquid Diet

Food Group	Recommended	Excluded
Soups	<ul style="list-style-type: none"> <li>• Clear broth or bouillon</li> <li>• Clear consommé</li> <li>• Packaged vegetable, chicken, or beef broth-mix <u>without</u> any particles of dried herbs or seasonings</li> </ul>	All others
Sweets & Desserts	<ul style="list-style-type: none"> <li>• Gelatin</li> <li>• Flavored ices</li> <li>• Sugar</li> <li>• Honey</li> <li>• Sugar substitutes</li> </ul>	All others
Beverages	<p><u>Clear fruit juices such as</u></p> <ul style="list-style-type: none"> <li>– apple</li> <li>– white cranberry</li> <li>– white grape</li> <li>– orange</li> </ul> <p><u>Soda such as</u></p> <ul style="list-style-type: none"> <li>– ginger ale</li> <li>– 7-Up®</li> <li>– Sprite®</li> <li>– Seltzer</li> <li>– cola</li> <li>• Gatorade®</li> <li>• Black coffee</li> <li>• Tea</li> </ul>	<p><u>All others including</u></p> <ul style="list-style-type: none"> <li>• nectars</li> <li>• milk</li> <li>• juices with pulp</li> <li>• alcoholic beverages</li> </ul>

### The Day of the Procedure

- Brush your teeth but do not swallow any water when rinsing your mouth.
- Take only those medicines you have been instructed to take with the least amount of water.
- Do not have anything to eat or drink before the procedure.

### **Positioning of the Catheters**

The radioactive material is Iridium. The catheters used to position the Iridium are placed in the prostate gland in the operating room. You will be given either general or spinal anesthesia. You will not feel any discomfort when the catheters are placed.

In the operating room, you will be lying on your back with your legs raised. A catheter will be placed into your bladder to drain urine. A small probe will be placed into your rectum. This probe will produce sound waves to create an image or ultrasound of your prostate on a video screen. Your doctor will use the image to guide the insertion of the catheters.

Between 12 and 22 catheters are inserted through the skin in your perineum into the prostate gland. The catheters will be held in place by a template. It is a small square piece of plastic with many holes in it. The template will be secured between your legs, just beneath your scrotum.

After the catheters are in place, your doctor will do a cystoscopy. This involves passing a small flexible tube into the bladder. The doctor can view the inside of the bladder through this tube. Because the prostate sits under the bladder, he or she can ensure the catheters are positioned correctly.

After the cystoscopy, you will be brought to the Post-Anesthesia Care Unit (PACU). You will stay there until you are fully awake. Your legs will be raised at a 30- to 45- degree angle on a leg-supporting device. A gel pad or special dressing will be placed under your lower back to protect your skin from pressure sores. Your legs will remain in this position until your treatments are completed the following day.

You will receive fluid in a vein (intravenously or IV). A patient-controlled analgesia (PCA) pump will be attached to your IV. It allows you to give yourself pain medicine. You may feel sore in the perineal area and in your buttocks once the anesthesia wears off. The pain medicine will help ensure you are comfortable while the catheters are in place.

You will also receive oxygen in the PACU. It will be removed once you are fully awake. The catheter that was inserted into your bladder will stay in place until the next day, when your treatment is completed.

## CT Scan

Once you are fully awake, you will be taken to have a CT scan to check the placement of the catheters. The doctor can adjust their position, if necessary. The CT scan will take about 20 minutes. Your treatment team will also use the CT scan to plan your HDR treatment. After the scan is completed, you will be taken to your hospital room.

## While in the Hospital

You will be confined to your bed throughout your hospital stay, which is generally two days. You will be lying on your back with your legs raised the entire time. You will be allowed to wiggle your toes, but you will not be able to move your hips or legs during the two days the catheters are in place. You may only move your arms and upper body. Venodyne® boots will be placed on your legs. These boots will be connected to a machine that pumps air in them from time to time to help the blood flow in your legs.

You will be asked to do deep breathing exercises using an incentive spirometer throughout the time you will be in the hospital. You will have all your meals in bed. You will be given a low-residue diet and medicine to prevent you from having a bowel movement. Some patients prefer not to eat food that makes them bloated or produces gas, as this makes them uncomfortable. Use your call bell if you need help; it will be anchored to your bedside.

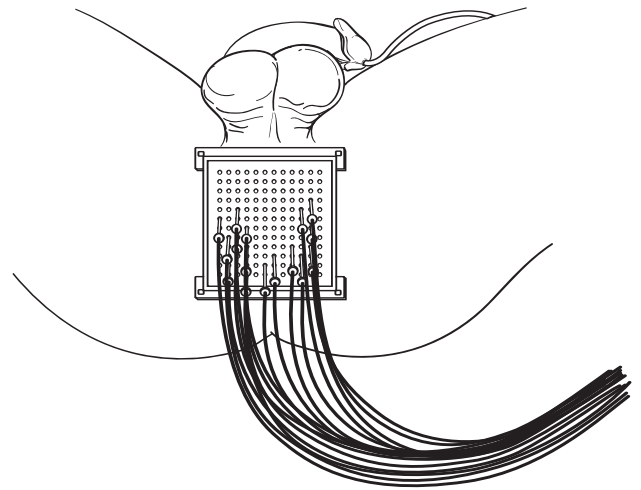


Figure 3: Diagram of template with catheters

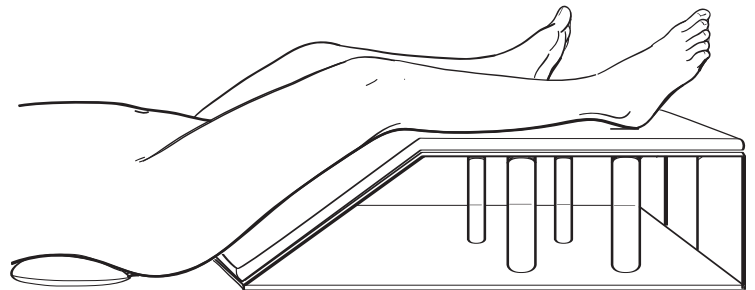


Figure 4: Diagram of legs elevated on support device

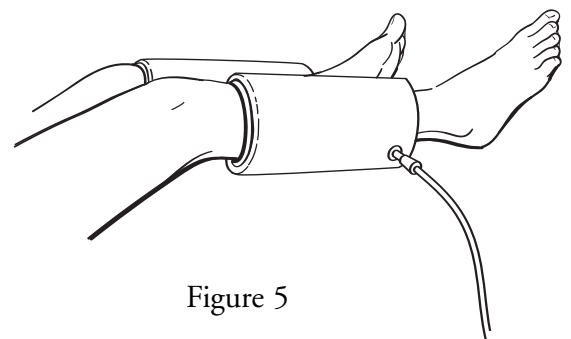


Figure 5

Lying still and flat in bed for two days is difficult. Since you will be in bed at all times, bring materials that will help you pass the time. You may bring books and magazines, a radio, videotapes, cards, or board games. Family and friends can visit you because you are not radioactive while you are in your hospital room.

## TREATMENTS

You will receive three or more treatments while you are in the hospital. The first will be given the evening of your first day in the hospital. It is given in the Department of Radiation Oncology. The radiation therapists will attach the catheters in your perineum to cables. These look like long, plastic straws. They are connected to a machine that stores the Iridium. You will hear the therapist calling out numbers to make sure that each catheter is connected correctly to the machine.

Once everything is set, you will be left alone in the room to receive treatment. A television monitor and an intercom allow the staff to see and hear you as they stand outside the room. The Iridium will be moved through the cables, into the catheters, and left in your prostate for two to five minutes. You will not feel any pain or discomfort while the Iridium is in place. You will not see or feel the radiation. You may hear the machine humming when it is turned on. After the treatment is done, the Iridium is moved back into the storage machine. The therapist will come back into the room, disconnect the cables, and arrange for you to be taken back to your room.

The next morning you will come back to the Department of Radiation Oncology for your second treatment. You will return six hours later for your last treatment. Each treatment will be given exactly as your first.

## AFTER TREATMENT IS COMPLETED

After the last treatment, your doctor will remove the catheters. You may feel a pulling sensation as the doctor does this. You will be given an extra dose of pain medicine from your PCA pump before the catheters are removed. This should minimize any discomfort. The catheter in your bladder may be irrigated and then it will be taken out.

A pressure dressing will be applied to your perineum. You will then be placed in a sitting position to put pressure on the dressing. You may feel lightheaded when you sit up. This will only last about 10-15 minutes.

You will be taken back to your hospital room. Once you reach your room, you will be allowed to get out of bed with assistance. Because you may feel dizzy and unsteady the first time you get up, someone **must** be there to assist you. You will be able to go home after you urinate on your own.

Before you are discharged, the doctor or nurse practitioner will come to your room to:

- Tell you how you to care for yourself after you go home.
- Review the side effects that you may have from treatment.
- Give you prescriptions to have filled.
- Give you a follow-up appointment.

## After Discharge

- Your doctor will give you a prescription for antibiotics; take **all** of them as directed until they are finished.
- Do not take aspirin, products that contain aspirin, or vitamin E for one week after your surgery. You may take Motrin® or Advil®.
- You may shower the day after you are discharged.
- Do not lift anything heavier than 20 pounds (9.1 kg) for 48 hours after the procedure.

- You may resume your regular diet.
- The planning for the external beam radiation treatment will begin about two weeks after your HDR brachytherapy. Your nurse will tell you what to expect. You will be given any instructions you need.

### **Possible Side Effects and How to Manage Them**

The following side effects are possible after HDR brachytherapy.

- Frequent urination, burning when you urinate, and dribbling of urine can occur one to two weeks after the procedure. You may have frequent urination for up to six weeks. You will be given a prescription for medicine to help with this.
- Your urine may be pink-tinted or have small amounts of blood in it for a few days after the procedure. Call your doctor if heavy bleeding occurs or if you pass blood clots.
- Semen may be blood-tinged for several weeks.
- Some pain is expected in the perineum for about 24 to 48 hours. You may take Extra-Strength Tylenol®. If this does not help, call your doctor or nurse.
- If you have any bleeding in the perineum, apply steady pressure with a clean, dry washcloth or gauze. Apply the pressure for about five minutes. If the bleeding becomes heavy or does not stop, call your doctor.
- Bruising and swelling of the testicles can occur. These will go away on their own, usually in about three weeks.
- You may have diarrhea. If so, take Imodium® (loperamide) as instructed on the package. This can be purchased without a prescription at any pharmacy. Call your doctor or nurse if the diarrhea is not relieved within 24 hours.

### **Important Telephone Numbers**

Monday to Friday 9AM to 5PM

Radiation Oncologist \_\_\_\_\_ Telephone \_\_\_\_\_

Radiation Nurse \_\_\_\_\_ Telephone \_\_\_\_\_

Secretary (to schedule appointments and get copies of records)  
 \_\_\_\_\_ Telephone \_\_\_\_\_

If you have any problems in the evening or weekend, please call the page operator at 212-639-7900 and ask for the radiation oncologist on call.

