Chapter 3. Treatment Options

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To ensure that prostate cancer does not develop further and is halted soon after diagnosis, early treatment is recommended to either remove or kill the cancer or tumor. The main treatment options for prostate cancer are surgery (prostatectomy), external beam radiation therapy, brachytherapy (seed implants or high dose rate temporary implants), and hormone therapy (medical or surgical orchiectomy). Other possible treatments are chemotherapy, cryosurgery, microwave therapy and watchful waiting (active surveillance).

Treatments are chosen based on the stage of the cancer and the patient's goals and priorities. This chapter provides an introductory description of each of the treatment options. Then, you can do more in-depth research about each of the options your doctor has recommended or that you are considering.

In this notebook, Chapter 6 will provide you with more information about surgery; Chapter 7 will provide information about radiation oncology; and Chapter 8 is about medical oncology.

Once you understand which treatment options are possible for you, Chapter 5 and the nurse navigator can help you narrow the options to the treatment plan that is best for you.

Treatment Options

Surgery*: Radical Prostatectomy*

Radical prostatectomy is a common treatment for early-stage localized prostate cancer. It is a major surgical procedure in which the prostate gland and the accompanying seminal vesicles are removed, either through an incision in the lower abdomen (transabdominal or retropubically) or between the scrotum and rectum (the perineal approach).

Radical prostatectomy can be nerve-sparing or non-nerve-sparing. If the surgeon can safely leave the nerve bundles on either side of the prostate that control erections, the chances of maintaining function are improved. The decision cannot be made until during the surgery when the chance that the cancer has been cleared from the prostate gland and/or surrounding tissue is assessed.

Robotic surgery is also an option in some places. The Da Vinci System is a remote-controlled robotic surgical system that uses miniature instruments and a separate 3-D console to maneuver the robotic surgical arms.

Radiation

Radiation can stop the growth and eliminate cancer cells. External beam radiation therapy (EBRT)

is delivered using a machine that shoots a beam of radiation through the body to the cancer. The radiation is usually given in short sessions each day, five days a week, over a seven- or eight-week period. Spreading the treatments out over time minimizes the damage to the surrounding healthy tissue. There are also several forms of EBRT: proton therapy, 3-D conformal and IMRT.

Proton therapy is a very precise form off conformal radiation, which means it can be shaped very closely to the tumor and allows doctors to deliver higher doses of radiation to the tumor while minimizing damage to the healthy surrounding tissue, thereby reducing side effects.

Three dimensional conformal radiation therapy (3-D-CRT) allows for aiming the radiation beams more accurately using computers to target the prostate by using beams from different directions at the same time. These combined beams make for better control of the radiation. Prior to having this treatment, a plastic mold of your body is made ahead of time, and then during the procedure, you are placed in the mold so that you remain as still as possible and are placed in the same correct position each time treatment is delivered.

IMRT stands for intensity modulated radiotherapy. It is another form of aiming radiation beams. Each treatment is carefully planned using 3-D computers and CT scans. With IMRT, each beam is modified to produce the dose intensity pattern that will best conform to the tumor shape, avoiding healthy surrounding tissue. Typically, combinations of several intensity-modulated fields coming from different beam directions maximizes tumor dose while also protecting surrounding healthy tissues.

Brachytherapy *(Radioactive Seed Implants and High-Dose Rate (HDR) Brachytherapy)*

Brachytherapy for prostate cancer can be administered as seed implants (tiny pellets containing radioactive material inserted permanently), or it can be done as high-dose rate (temporary insertion of a high intensity radiation source for a short period of time). Permanent seeds are implanted directly into the cancer where they continuously give off low-level radiation (low dose rate) for months whereas the HDR source is inserted and removed over a period of days. Using transrectal ultrasound (TRUS), these devices can be positioned so that the radiation is distributed within the prostate gland to maximize the tumor dose and reduce surrounding organ radiation to a minimum.

Brachytherapy does not require a surgical incision, and therefore is usually performed on an outpatient basis. The sources (which are smaller than a grain of rice) are inserted through thin needles that are passed into (or just around) the prostate gland through the skin between the scrotum and the rectum. This procedure is done using general anesthesia or spinal anesthesia. The doctor uses a transrectal ultrasound machine to see the prostate gland in real time while accurately placing the seeds or HDR catheters. While the needles are being inserted the ultrasound probe is inside the rectum. The number of needles (and permanent seeds) or HDR catheters required varies from patient to patient, depending on the size of the prostate gland.

Hormone Therapy

The goal of hormone therapy is to lower the levels of male hormones (called androgens) in order to slow the growth of the cancer. Testosterone is the primary androgen, and most of it is produced in the testicles. Reducing testosterone levels can be done with injected medications (e.g., Lupron or Zoladex), oral medications (Casodex or Flutamide), or by surgical removal of the testicles

(orchiectomy). Another option is treatment with female hormones.

***Surgical**: Orchiectomy*

Removing the testicles (orchiectomy) is another way to minimize the production of testosterone. This surgery causes immediate and irreversible loss of libido and sterility. The loss of libido can be re-obtained with injections and patches.

Chemotherapy

Chemotherapy uses medication to kill cancer cells. It may be taken by pill or be put into the body by a needle in the vein (intravenously). Chemotherapy is called a systemic treatment because the drug enters the bloodstream, travels through the body and can kill cancer cells outside the prostate. This type of treatment does not cure cancer and is usually only used for late stage treatment of prostate cancer that has recurred or spread (metastasized).

Cryosurgery

Cryosurgery is a procedure for treating localized prostate cancer by using very low temperatures to freeze the cancer cells. This eliminates most of the prostate gland and the cancer cells along with it. It usually requires at least two days in the hospital, and the procedure requires either general anesthesia or a spinal anesthesia. During the procedure the urologist will use liquid nitrogen or argon gas to freeze the prostate gland.

To do this procedure, needles are inserted into the prostate gland through the skin between the scrotum and rectum. Then, the doctor temporarily injects the liquid nitrogen or argon gas to freeze the prostate, which kills the cancer cells as it melts. Doctors usually do this at least twice during the procedure and use an ultrasound probe inserted into your rectum to see how the freezing is going.

Hyperthermia Therapy

Hyperthermia, or heat treatment, can be used in addition to radiation therapy in selected cases of prostate cancer (particularly in recurring cases). It works because blood vessels open up (dilate) when heat is applied. Unlike healthy cells, a tumor includes cells that are tightly packed which does not allow for easily circulation. When heat (between 107 and 113 degrees Fahrenheit) is applied to the tumor, vital nutrients and oxygen are cut off from the tumor cells. This results in the destruction of the cancer cells.

The usual course off hyperthermia treatments runs five days a week, for five to eight weeks, with each treatment lasting about one hour.

***Watchful Waiting** (Active Surveillance)*

Watchful waiting is a valid alternative approach to treatment of prostate cancer. It is not “doing nothing.” It is a treatment choice by men who decide not to have immediate cancer treatment. During the watchful waiting period, digital rectal examination and serial PSA tests are very important so that progression of the disease can be detected as early as possible. The decision to watch and wait implies careful and ongoing clinical evaluations. It is selected by some patients with

prostate cancer, particularly those with low-risk group features, because in some cases, prostate cancer can develop very slowly.

Watchful waiting is most appropriate for men who have a short life expectancy, have other significant illnesses, or have small tumors with a low Gleason score and a low PSA level. This choice usually includes regular PSA tests, digital rectal exams (DREs) and other tests to monitor the growth of the cancer, as well as lifestyle changes involving, but not limited to diet and exercise.

Table 1. Treatment Options for Prostate Cancer

Treatment	Benefits	Drawbacks	Does it Cure Cancer?	Back-up (if it fails)
Hormone Therapy o Male hormones (androgens) are reduced or eliminated from the body o Good alternative for older men who do not want XRT or to watch and wait o Also used for men with metastatic disease	1. Orchiectomy is a one-time, permanent procedure; avoids multiple shots; and drops testosterone to nearly zero quickly. 2. Injections are not permanent. 3. Antiandrogen therapy blocks cells' ability to use any testosterone that has not been blocked by the injections.	1. Orchiectomy is irreversible, surgery; may cause pain and bleeding. 2. Injections require shots every one to four months, and can be expensive. 3. Antiandrogen therapy may involve diarrhea, liver damage, impaired night vision. (All: hot flashes, decreased sex drive, breast tenderness or enlargement, impotence).	No – hormone therapy stops the growth of prostate cancer cells.	Chemotherapy
Cryotherapy	Minimally invasive, no blood loss, quick recovery, alternative to prostatectomy, or for recurrence after radiation therapy.	Impotence, urethral strictures, urinary retention and frequency, penile or scrotal swelling. Difficult after TURP, possible	Possibly– usually salvage therapy	Hormone treatment, radical prostatectomy (but may have complications)

		incontinence up to 30 % when used as salvage procedure.		
Radical prostatectomy (surgery)	One-time procedure used in early stages that allows for pathologic staging of disease	Long recovery period, may cause erectile dysfunction (30 to 50%), bladder neck contracture, incontinence (2 to 4%). In rare cases, need for blood transfusion, rectal injury.	Yes, if cancer is localized.	External beam radiation therapy (locally) or hormones (metastases)
External beam radiation therapy (EBRT)	Avoids major surgery, may cure in early stages. Less risk of incontinence and impotence than non-nerve sparing surgery.	Fatigue, skin reaction, urinary frequency, proctitis, rectal bleeding, frequent stools, requires 30+ treatments, 20-40% erectile dysfunction	Yes, if cancer is localized.	Hormone treatment, which is palliative (relief without cure). Prostatectomy, with higher risk of incontinence
Brachytherapy	Minimally invasive, quick recovery, short stay for treatment	Men with high grade cancer, PSA $\geq$10, Gleason $\geq$ 7 are not good candidates unless combined with EBRT. Urinary frequency and urgency, urinary outlet obstruction, proctitis. Chance of impotence: 25 to 60%.	Yes, if cancer is localized.	Hormones (metastases)