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Prostate Cancer - Treatment Options [1]

This section has been reviewed and approved by the Cancer.Net Editorial Board [2], 10/2014

ON THIS PAGE: You will learn about the different ways doctors use to treat men with prostate cancer. To see other pages, use the menu on the side of your screen.

This section outlines treatments that are the standard of care (the best proven treatments available) for this specific type of cancer. When making treatment plan decisions, patients are also encouraged to consider clinical trials as an option. A clinical trial is a research study to test a new approach to treatment to evaluate whether it is safe, effective, and possibly better than the standard treatment. Clinical trials may test such approaches as a new drug, a new combination of standard treatments, or new doses of current therapies. Your doctor can help you review all treatment options. For more information, see the Clinical Trials [3] and Latest Research [4] sections.

Treatment overview

In cancer care, different types of doctors often work together to create an overall treatment plan that combines different type of treatments. This is called a multidisciplinary team [5].

Descriptions of the most common treatment options for prostate cancer are listed below, followed by an outline of general approaches to treatment according to stage. Treatment options and recommendations depend on several factors, including the type and stage of cancer, possible side effects, and the patient?s preferences and overall health. Your care plan may also include treatment for symptoms and side effects, an important part of cancer care.

Take time to learn about your treatment options and be sure to ask questions about things that are unclear. Also, talk with your doctor about the goals of each treatment, the likelihood that the treatment will work, what you can expect while receiving the treatment, and the possible urinary, bowel, sexual, and hormone-related side effects of treatment. Men should also discuss with their doctor how the various treatment options affect recurrence, survival, and quality of life, as well as their preferences. In addition, the success of any treatment often depends on the skill and expertise of the physician or surgeon, so it is important to find doctors who have experience treating prostate cancer. Learn more about making treatment decisions [6].

Active surveillance for early-stage cancer

If prostate cancer is found at an early stage, is growing slowly, and treating the cancer would cause more discomfort than the disease, a doctor may recommend active surveillance or watchful waiting. During active surveillance, the cancer is monitored closely with regular PSA tests, DRE tests, and watching for symptoms with periodic biopsies. Active treatment only begins if the tumor shows signs of becoming more aggressive or spreading, causes pain, or blocks the urinary tract. Active surveillance is usually preferred for men with a long life expectancy who may benefit from curative local therapy if the cancer shows signs of getting worse.

Watchful waiting involves less intensive monitoring with periodic PSA tests, DRE tests, and/or watching for symptoms. It is usually recommended for much older patients or those with other serious or life-threatening illnesses. If the cancer shows signs of getting worse, hormone therapy is often recommended to treat symptoms.

Real caution must be taken not to make errors of judgment about the disease. In other words, doctors must collect as much information as possible about the patient?s other illnesses and life expectancy so the chance to detect an early, aggressive prostate cancer is not missed. For this reason, many doctors recommend a repeat biopsy shortly after diagnosis to confirm that the cancer is in an early stage and growing slowly before considering active surveillance for an otherwise healthy man. New information is becoming available all the time, and it is important for men to discuss these issues with their doctor to make the best decisions about treatment.

Local treatments

Local treatments are aimed at eliminating cancer from a specific, limited area of the body. For men diagnosed with early-stage prostate cancer, local treatments, such as surgery or radiation therapy, may get rid of the cancer completely. However, if the cancer has spread outside the prostate gland, other types of treatment may be needed to destroy cancer cells located in other parts of the body.

Surgery

Surgery is the removal of the tumor and surrounding tissue during an operation. It is used to try to eliminate a tumor before it spreads outside the prostate. A surgical oncologist is a doctor who specializes in treating cancer using surgery. For prostate cancer, a urologist or urologic oncologist is the surgical oncologist involved in treatment. The type of surgery depends on the stage of the disease, the man?s general health, and other factors. Surgical options include:

Radical (open) prostatectomy. A radical prostatectomy is the surgical removal of the entire prostate and seminal vesicles. Lymph nodes in the pelvic area may also be removed. This operation has the risk of interfering with sexual function. Nerve-sparing surgery, when possible, increases the chance that a man can maintain his sexual function after surgery by avoiding surgical damage to the nerves that allow erections and orgasm to occur. Orgasm can occur even if some nerves are cut since these are two separate processes. Urinary incontinence [7] is also a possible side effect of radical prostatectomy. To help resume normal sexual function, men can receive drugs, penile implants, or injections. Sometimes, another surgery can fix urinary incontinence.

Robotic or laparoscopic prostatectomy. This type of surgery is possibly much less invasive than a radical prostatectomy and may shorten recovery time. A camera and instruments are inserted through small, keyhole incisions in the patient?s abdomen. The surgeon then directs the robotic instruments to remove the prostate gland and surrounding tissue. In general, robotic prostatectomy causes less bleeding and less pain, but the sexual and urinary side effects can be similar to a radical (open) prostatectomy. This procedure has not been available for as long as radical (open) prostatectomy, so longer-term follow-up information, including permanent cure rates, are not yet certain. Talk with your doctor about whether your treatment center offers this procedure and how it compares with the results of the conventional radical (open) prostatectomy.

Cryosurgery. Cryosurgery, also called cryotherapy or cryoablation, is the freezing of cancer cells with a metal probe inserted through a small incision in the area between the rectum and the scrotum, the skin sac that contains the testicles. It is not an established therapy or standard of care for men newly diagnosed with prostate cancer. Cryosurgery has not been compared with radical prostatectomy or radiation therapy, so doctors do not know if it is a comparable treatment option. Its effects on urinary and sexual function are also not well defined.

Transurethral resection of the prostate (TURP). TURP is most often used to relieve symptoms of a urinary blockage, not to treat prostate cancer. In this procedure, with the patient under a full anesthesia, which is medication to block the awareness of pain, a surgeon inserts a narrow tube with a cutting device called a cystoscope into the urethra and then into the prostate to remove prostate tissue.

Learn more about cancer surgery [8].

Radiation therapy

Radiation therapy is the use of high-energy rays to destroy cancer cells. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist. The most common type of radiation treatment is called external-beam radiation therapy, which is radiation given from a machine outside the body. When radiation treatment is given using implants, it is called internal radiation therapy or brachytherapy. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time.

External-beam radiation therapy. External-beam radiation therapy focuses a beam of radiation on the area with the cancer. Some cancer centers use conformal radiation therapy (CRT), in which computers help precisely map the location and shape of the cancer. CRT reduces radiation damage to healthy tissues and organs around the tumor by directing the radiation therapy beam from different directions to focus the dose on the tumor. External-beam radiation therapy is usually given with a high-energy x-ray beam. It can also be given with proton therapy, which is described below.

Intensity-modulated radiation therapy (IMRT). IMRT is a type of external-beam radiation therapy that uses CT scans to form a three-dimensional (3D) picture of the prostate before treatment. A computer uses this information about the size, shape, and location of the prostate cancer to determine how much radiation is needed to destroy it. With IMRT, high doses of radiation can be directed at the prostate without increasing the risk of damaging nearby organs.

Proton therapy. Proton therapy, also called proton beam therapy, is a type of external-beam radiation therapy that uses protons rather than x-rays. At high energy, protons can destroy cancer cells. Current research has not shown that proton therapy provides any more benefit to patients with prostate cancer than traditional radiation therapy. It is also more expensive.

Brachytherapy. Brachytherapy is the insertion of radioactive sources directly into the prostate. These sources, called seeds, give off radiation just around the area in which they are inserted and may be used for hours (high-dose rate) or for weeks (low-dose rate). Low-dose rate seeds are left in the prostate permanently, even after all the radioactive material has been used up. For a man with a high-risk cancer, brachytherapy is usually combined with other treatments.

Radiation therapy may cause immediate side effects such as diarrhea or other problems with bowel function, such as diarrhea, gas, bleeding, and loss of control of bowel movements; increased urinary urge or frequency; fatigue; impotence; and rectal discomfort, burning, or pain. Most of these side effects usually go away after treatment, but impotence is usually permanent. Many side effects of radiation therapy may not show up until months or years after treatment. See the After Treatment [9] section for more information about long-term side effects.

Learn more about radiation therapy [10].

Systemic treatments

Doctors use treatments such as hormone therapy, chemotherapy, and vaccine therapy to reach cancer cells throughout the body. For men with later-stage prostate cancer or those considered to have a high risk of recurrence, systemic treatments may be used to shrink the cancer before surgery or radiation therapy. This is known as neoadjuvant therapy. Systematic treatment may also be used after local treatment to eliminate any remaining cancer cells and reduce the chance the cancer will return. This is known as adjuvant therapy.

Hormone therapy

Because prostate cancer growth is driven by male sex hormones called androgens, lowering levels of these hormones can help slow the growth of the cancer. Hormone treatment is also called androgen ablation, androgen-deprivation therapy, or castration. The most common androgen is testosterone. Testosterone levels in the body can be lowered either by surgically removing the testicles, known as surgical castration, or by taking drugs that turn off the function of the testicles, called medical castration. See below for more information.

Hormone therapy is used to treat prostate cancer in different situations, including recurrent prostate cancer and metastatic prostate cancer. Metastatic prostate cancer is cancer that has spread throughout the body.

Recent research has shown that hormone therapy can help lengthen lives when used with radiation therapy for a prostate cancer that is more likely to recur. For some men, hormone therapy will be used first to shrink a tumor before radiation therapy or surgery. In some men with prostate cancer that has spread locally, called locally advanced or high-risk prostate cancer, hormone therapy is given before, during, and after radiation therapy for three years. Hormone therapy should also be considered as adjuvant therapy if prostate cancer has been found in the lymph nodes after a radical prostatectomy. It may also be given for up to three years for men with intermediate-risk or high-risk cancer.

Traditionally, hormone therapy was used for life or until it stopped controlling the cancer. Then the cancer was called castration-resistant, meaning that the hormone therapy has stopped working, and other treatment options were considered. During the past two decades, researchers have studied the use of intermittent hormone therapy, which is hormone therapy that is given for specific periods of time and then stopped temporarily according to a schedule. Giving hormones in this way may lower the side effects of this therapy, but it has not been shown to be effective for all stages of prostate cancer.

Types of hormone therapy include:

Bilateral orchiectomy. Bilateral orchiectomy is the surgical removal of both testicles and was the first treatment used for metastatic prostate more than 70 years ago. Even though this is an operation, it is considered a hormone therapy because it removes the main source of testosterone production, the testicles. The effects of this surgery are permanent and cannot be reversed.

LHRH agonists. LHRH stands for luteinizing hormone-releasing hormone. Medications known as LHRH agonists prevent the testicles from receiving messages sent by the body to make testosterone. By blocking these signals, LHRH agonists reduce a man?s testosterone level just as well as removing his testicles. However, unlike surgical castration, the effects of LHRH agonists are reversible, so testosterone production usually begins again once a patient stops taking the medication.

LHRH agonists are injected or placed as small implants under the skin. Depending on the drug used, they may be given once a month or once a year. When LHRH agonists are first given, testosterone levels briefly increase before falling to very low levels. This effect, known as a ?flare,? happens because of a temporary surge in testosterone production by the testicles in response to the way LHRH agonists work in the body. This flare may increase the activity of prostate cancer cells and cause symptoms and side effects, such as bone pain in men whose cancer has spread to the bones.

LHRH antagonist. This class of drugs, also called a gonadotropin-releasing hormone (GnRH) antagonist, stops the testicles from producing testosterone-like LHRH agonists, but they reduce testosterone levels more quickly and do not cause a flare like LHRH agonists. The FDA has

approved one drug, degarelix (Firmagon), given by monthly injection, to treat advanced prostate cancer. One side effect of this drug is that it may cause a severe allergic reaction.

Anti-androgens. While LHRH agonists and antagonists lower testosterone levels in the blood, anti-androgens block testosterone from binding to so-called ?androgen receptors,? which are chemical structures in cancer cells that allow testosterone and other male hormones to enter the cells. These drugs, such as bicalutamide (Casodex), flutamide (Eulexin), and nilutamide (Nilandron), are taken as pills, usually by men who have ?hormone sensitive? prostate cancer, which means that the prostate cancer still responds to hormone therapy. Anti-androgens are not usually used by themselves in prostate cancer treatment.

Enzalutamide (Xtandi) is a newer type of anti-androgen that blocks signals from the androgen receptor that tell prostate cancer cells to grow and divide. Enzalutamide is approved by the FDA for men with metastatic castration-resistant prostate cancer who have or have not previously received docetaxel (Docefrez, Taxotere).

Combined androgen blockade. Sometimes anti-androgens are combined with bilateral orchiectomy or LHRH agonist treatment to maximize the blockade of male hormones. This is because even after the testicles are no longer producing hormones, the adrenal glands still make small amounts of androgens. Many doctors also feel that this combined approach is the safest way to start hormone treatment, as it prevents the possible flare that sometimes happens in response to LHRH agonist treatment. Some, but not all, research has shown about a six-month difference in long-term survival from the use of combined androgen blockade; therefore, some doctors prefer to give combined drug treatment while others may give the combination early in the treatment to prevent the flare.

CYP17 inhibitors. Although the testicles are the main producers of androgens, other cells in the body, including prostate cancer cells, can still make small amounts, which may drive cancer growth. Abiraterone (Zytiga) is a drug that blocks an enzyme called CYP17 and prevents these cells from making certain hormones, including androgens. Abiraterone, which is a pill taken every day with prednisone (multiple brand names), has been approved by the FDA as a treatment for progressive metastatic castration-resistant prostate cancer with or without prior docetaxel chemotherapy. Research studies have shown that abiraterone increased survival for men with this type of cancer. Abiraterone may cause serious side effects such as high blood pressure, low blood potassium levels, and fluid retention. Other common side effects include weakness, joint swelling or pain, swelling in the legs or feet, hot flushes, diarrhea, vomiting, shortness of breath, and anemia.

Hormone therapy will cause side effects that will generally go away after hormone treatment has finished, except in men who have had an orchiectomy. General side effects of hormone therapy include impotence, loss of sexual desire, hot flashes with sweating, gynecomastia (growth of breast tissue), depression, weight gain, loss of muscle mass, and osteopenia or osteoporosis, which is thinning of bones. Although testosterone levels may recover after stopping hormone therapy, some men who have had medical castration with LHRH agonists for many years may continue to have hormonal effects, even if they are no longer taking these drugs.

Another important side effect of hormone therapy is the risk of developing metabolic syndrome. Metabolic syndrome is a set of conditions, such as obesity, high levels of blood cholesterol and

high blood pressure that increases a person?s risk of heart disease, stroke, and diabetes. Currently, it is not certain how often this happens or exactly why it happens, but it is quite clear that patients who receive a surgical or medical castration with hormone therapy have an increased risk of developing metabolic syndrome. The risk is increased even if the medical castration is temporary. Find out more about hormone deprivation symptoms [11] and how to manage them.

The risks and benefits of castration should be carefully discussed with your doctor. For men with metastatic prostate cancer, especially if it is advanced and causing symptoms, most doctors believe that the benefits of castration far outweigh the risks of metabolic syndrome.

Chemotherapy

Chemotherapy is the use of drugs to destroy cancer cells, usually by stopping their ability to grow and divide. Chemotherapy is usually given by a medical oncologist, a doctor who specializes in treating cancer with medication.

Systemic chemotherapy is delivered through the bloodstream to reach cancer cells throughout the body. Chemotherapy for prostate cancer is given through an intravenous (IV) tube placed into a vein using a needle. It may help patients with advanced or castration-resistant prostate cancer. A chemotherapy regimen usually consists of a specific number of cycles given over a set period of time.

There are several standard drugs used for prostate cancer. In general, standard chemotherapy begins with docetaxel combined with a steroid called prednisone. This combination has been shown to help men with advanced prostate cancer live longer compared with another chemotherapy drug, mitoxantrone (Novantrone), which was one of the first chemotherapies approved for metastatic castration-resistant prostate cancer. Mitoxantrone is not used much anymore; however, it is sometimes considered in specific situations and is most useful for controlling pain from the cancer. The FDA has also approved another drug, cabazitaxel (Jevtana), based on research that showed it improved survival for patients whose disease progressed after having docetaxel. Cabazitaxel is currently being compared to docetaxel in clinical trials, and the results are pending.

In general, the side effects of chemotherapy depend on the individual, the type of chemotherapy received, the dose used, and the length of treatment, but they can include fatigue, sores in the mouth and throat, diarrhea, nausea and vomiting, constipation, blood disorders, nervous system effects, changes in thinking and memory, sexual and reproductive issues, appetite loss, pain, and hair loss. The side effects of chemotherapy usually go away once treatment has finished. However, some side effects may continue, come back, or develop later. Ask your doctor which side effects you may experience, based on your treatment plan. Your health care team will work with you to manage or prevent many of these side effects.

Learn more about chemotherapy [12] and preparing for treatment [13]. The medications used to treat cancer are continually being evaluated. Talking with your doctor is often the best way to learn about the medications prescribed for you, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using searchable drug databases [14].

Vaccine therapy

Sipuleucel-T (Provenge) is an immunotherapy. Immunotherapy is designed to boost the body?s natural defenses to fight the cancer. It uses materials made either by the body or in a laboratory to improve, target, or restore immune system function.

Sipuleucel-T is adapted for each patient. Before treatment, blood is removed from the patient in a process called leukapheresis. Special immune cells are separated from the patient?s blood, modified in the laboratory, and then put back into the patient. At this point, the patient?s immune system may recognize and destroy the prostate cancer cells. It is difficult to know if this treatment is working to treat the cancer for a specific patient because it has not been shown to shrink the cancer, lower the PSA level, or keep the cancer from getting worse. However, results from clinical trials have shown that treatment with sipuleucel-T can increase survival in men with castration-resistant metastatic prostate cancer with few or no symptoms compared to treatment with a placebo vaccine.

Learn more about immunotherapy [15] and cancer vaccines [16].

Getting care for symptoms and side effects

Cancer and its treatment often cause side effects. In addition to treatment to slow, stop, or eliminate the cancer, an important part of cancer care is relieving a person?s symptoms and side effects. This approach is called palliative or supportive care, and it includes supporting the patient with his physical, emotional, and social needs.

Palliative care can help a person at any stage of illness. People often receive treatment for the cancer and treatment to ease side effects at the same time. In fact, patients who receive both often have less severe symptoms, better quality of life, and report they are more satisfied with treatment.

Palliative treatments vary widely and often include medication, nutritional changes, relaxation techniques, and other therapies. You may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, and radiation therapy. Talk with your doctor about the goals of each treatment in your treatment plan.

Specific supportive care options used to help treat the symptoms of later-stage prostate cancer and enhance the quality of a patient?s life include:

Strontium and samarium. Given by injection, these radioactive substances are absorbed near the area of bone pain. The radiation that is released helps relieve the pain, probably by causing the tumor in the bone to shrink.

Radium-223. Radium-223 dichloride (Xofigo) is a radioactive substance that is naturally attracted to areas of high bone turnover (areas where bone is being destroyed and replaced more than normal). Radium-223 delivers radiation directly to tumors found in the bone, limiting damage to health tissue. According to the results of a clinical trial published in 2013, treatment with radium-223 reduced bone-related complications and improved survival. See the section below about castration-resistant prostate cancer for more information.

Bone-modifying drugs. Prostate cancer that has spread to the bone or hormone therapy for prostate cancer can weaken a patient?s bones and lead to bone pain and an increased risk of breaks known as fractures. Therefore, bone-modifying drugs like denosumab (Prolia) and zoledronic acid (Zometa), may be given to men diagnosed with metastatic castration-resistant prostate cancer to help reduce bone complications, such as pain, fracture, and need for surgery. Some men taking hormone therapy may also be given a bone-modifying drug less frequently and at a lower dose to promote bone health.

A possible condition associated with bone-modifying drugs is osteonecrosis of the jaw. It is an uncommon but serious condition. The symptoms of osteonecrosis of the jaw include pain, swelling, and infection of the jaw; loose teeth; and exposed bone.

Before treatment begins, talk with your health care team, including your dentist, about the possible side effects of your specific treatment plan and supportive care options. And during and after treatment, be sure to tell your doctor or another health care team member if you are experiencing a problem so it is addressed as quickly as possible. Learn more about palliative care [17].

Developing a treatment plan

Because most prostate cancers are found in the early stages when they are growing slowly, you usually do not have to rush to make treatment decisions. During this time, it is important to talk with your doctor about the risks and benefits of all your treatment options and when treatment should begin. This discussion should also address the current state of the cancer, such as whether PSA levels are rising or steady and whether the cancer has spread to the bones, your health history, and any other medical conditions you may have. Although the treatment(s) recommended to you will depend on these factors, there are some general steps for treating prostate cancer.

Early-stage prostate cancer

Early-stage prostate cancer means that cancer cells are found only in the prostate. If the cancer has a Gleason score of 6 or less and a PSA level less than 10, it usually grows very slowly and may take a number of years to cause any symptoms or other health problems, if it ever does at all. As a result, active surveillance may be recommended. Alternatively, radiation therapy (external-beam or brachytherapy) or surgery may be suggested depending on your age and

overall health. Clinical trials testing new types of treatment may also be an option.

For men with an early-stage cancer that has a higher Gleason score, the cancer may be faster growing so radical prostatectomy and radiation therapy are often appropriate. Your doctor will consider your age and general health before recommending either or both as a treatment option.

Locally advanced prostate cancer

For some patients with a larger tumor, local treatments, like surgery and radiation therapy, are less likely to eliminate the cancer by themselves. Radical prostatectomy at this stage is not nerve sparing and is often done with removal of the pelvic lymph nodes. Some men are given neoadjuvant hormone therapy, meaning the hormone therapy is given before surgery, or have radiation therapy (external-beam and/or brachytherapy) afterward. Research has shown that adjuvant radiation therapy may improve survival for men with locally advanced prostate cancer (pT3 disease) or those with positive margins after prostatectomy. Having positive margins means that cancer cells were found in the area of tissue surrounding the prostate that was removed during surgery.

For men who receive radiation therapy as their primary treatment, it is generally combined with several months of hormone therapy if there is a greater chance of recurrence based on disease extent, PSA level, and/or Gleason score. For older men with limited longevity and whose cancer is not causing symptoms, or for those who have another more serious illness, watchful waiting may be considered.

Metastatic prostate cancer

If cancer has spread to another location in the body, it is called metastatic cancer. At this stage, surgery to remove the prostate and pelvic lymph nodes cannot eliminate the cancer. As a result, most men with metastatic prostate cancer receive hormone therapy, as described above. Read more about hormone therapy for advanced prostate cancer [18].

If the cancer grows after hormone therapy, there are several standard drugs that can be utilized. Some patients may also receive external-beam radiation therapy to an area of concern because of pain or other reasons. Clinical trials also are an option, so patients should talk to their doctor about participating in a clinical trial.

Another important part of treating metastatic prostate cancer is relieving a patient's symptoms and side effects. Surgery (TURP) may be used to manage symptoms such as bleeding or urinary obstruction, while bone-modifying drugs, such as denosumab or zoledronic acid, may be used to strengthen bones and reduce the risk of pain progression and fractures for men with prostate cancer that has spread to the bone. Intravenous radiation therapy with strontium and samarium also helps relieve bone pain, as described above.

Patients with this diagnosis are encouraged to talk with doctors who are experienced in treating this stage of cancer, because there can be different opinions about the best treatment plan. Learn more about seeking a second opinion [19] before starting treatment, so you are comfortable with the treatment plan chosen. This discussion may include clinical trials [3].

Although there is no cure for advanced prostate cancer, it is often treatable. Many men outlive their prostate cancer, even those with advanced disease. Often, the prostate cancer grows slowly, and there are now effective treatment options that extend life even further.

For most patients, a diagnosis of metastatic cancer is very stressful and, at times, difficult to bear. Patients and their families are encouraged to talk about the way they are feeling with doctors, nurses, social workers, or other members of the health care team. It may also be helpful to talk with other patients, including through a support group.

Castration-resistant prostate cancer

Prostate cancer that no longer responds to hormone therapy, such as LHRH agonists or anti-androgens, is considered castration resistant and can be difficult to treat. Doctors may recommend chemotherapy, which is described above, for patients with this type of prostate cancer, especially those with bone pain or cancer-related symptoms. Research studies of chemotherapy treatment plans that include the drug docetaxel have shown they improve survival by several months. Cabazitaxel can be used after docetaxel stops working.

For some patients who have no or very few cancer symptoms and generally have not had chemotherapy, vaccine therapy with sipuleucel-T may be an option. In 2010, the FDA approved sipuleucel-T for men with castration-resistant metastatic prostate cancer with few or no symptoms because in research studies it increased survival by about four months compared to placebo. See above for more information on vaccine therapy.

The FDA has approved treatment with the CYP17 inhibitor abiraterone along with prednisone for men with castration-resistant prostate cancer that has grown or spread in men with or without previous chemotherapy with docetaxel. Similarly, enzalutamide is FDA-approved for men with metastatic castration-resistant prostate cancer with or without prior docetaxel treatment.

In 2013, the FDA approved radium-223 dichloride as a treatment for men with metastatic castration-resistant prostate cancer that had spread to bones but not to other organs. This monthly injection is intended to be given to men whose cancer has spread only to their bones and who have already received treatment to lower their testosterone level. According to a study involving 809 men with castration-resistant prostate cancer that had spread to their bones, but not to other organs, men who received radium-223 lived an average of 14 months compared to just over 11 months for men who received a placebo injection.

Learn more about the treatment of metastatic castration-resistant prostate cancer [20].

Remission and the chance of recurrence

A remission is when cancer cannot be detected in the body and there are no symptoms. This may also be called ?no evidence of disease? or NED.

A remission can be temporary or permanent. This uncertainty leads to many survivors feeling worried or anxious that the cancer will come back. Although there are treatments to help prevent a recurrence, such as hormone therapy and radiation therapy, which are described above, it is

important to talk with your doctor about the possibility of the cancer returning. Understanding the risk of recurrence and the treatment options may help you feel more prepared if the cancer does return. Learn more about coping with the fear of recurrence [21].

In general, following surgery or radiation therapy, the PSA level in the blood usually drops. If the PSA level starts to rise again, it may be a sign that the cancer has come back. If the cancer does return after the original treatment, it is called recurrent cancer.

When this occurs, a cycle of testing will begin again to learn as much as possible about the recurrence, including where the recurrence is located. The cancer may come back in the prostate (called a local recurrence), in the tissues or lymph nodes near the prostate (a regional recurrence), or in another part of the body, such as the bones, lungs, or liver (a distant or metastatic recurrence). Sometimes the doctor cannot find a tumor even though the PSA level has increased. This is known as a PSA-only recurrence.

After testing is done, you and your doctor will talk about your treatment options. The choice of treatment plan is based on the type of recurrence and the treatment(s) you have already received, and may include the therapies described above, such as radiation therapy, prostatectomy for men initially treated with radiation therapy, or hormone therapy. Your doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer.

Palliative care usually includes pain medication, external-beam radiation therapy, brachytherapy with strontium or samarium, or other treatments to reduce bone pain. See above for more information.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients are encouraged to talk with their health care team about these feelings and ask about support services to help them cope. Learn more about dealing with cancer recurrence [22].

If treatment fails

Recovery from cancer is not always possible. If treatment is not successful, the disease may be called advanced or terminal cancer.

This diagnosis is stressful, and it may be difficult to discuss. However, it is important to have open and honest conversations with your doctor and health care team to express your feelings, preferences, and concerns. The health care team is there to help, and many team members have special skills, experience, and knowledge to support patients and their families. Making sure a person is physically comfortable and free from pain is extremely important.

Patients who have advanced cancer and who are expected to live less than six months may want to consider a type of palliative care called hospice care. Hospice care is designed to provide the best possible quality of life for people who are near the end of life. You and your family are encouraged to think about where you would be most comfortable: at home, in the hospital, or in a hospice environment. Nursing care and special equipment can make staying at home a workable alternative for many families. Learn more about advanced cancer care planning [23].

After the death of a loved one, many people need support to help them cope with the loss. Learn

more about grief and loss [24].

The next section helps explain clinical trials, which are research studies. Use the menu on the side of your screen to select About Clinical Trials, or you can select another section, to continue reading this guide.

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