Prostate Cancer
ACTION PLAN
Choosing the treatment that’s right for you

Video Series Guidebook
View videos at kpactionplans.org

Endorsed by Kaiser Permanente Inter-regional Chiefs of Urology

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Prostate Cancer ACTION PLAN
Choosing the treatment that’s right for you

This guidebook and its companion video series will help you talk with your doctor and make an informed decision together about the treatment that’s right for you.

Go to kpactionplans.org to view this guidebook and the videos online.

Stephen Lieberman, MD
Kaiser Permanente Board Certified Urologist

Endorsed by Kaiser Permanente
Inter-regional Chiefs of Urology
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Each segment matches a corresponding segment in the video series that accompanies this guidebook.
Introduction

Being diagnosed with prostate cancer is a life-changing event. 15%, or 1 out of 7 men, will be diagnosed with prostate cancer during their lifetimes (SEER* data). Each year around 240,000 men are newly diagnosed with prostate cancer, and about 24,000 men die each year of prostate cancer. It is a common disease.

There are over 2.6 million men in the United States who either have prostate cancer, or have been cured of prostate cancer.

This guidebook and the video that accompanies it were developed to help you talk with your doctors about treatment options. The goal of this conversation is to make an informed decision together about the most appropriate treatment for you.

What’s important to understand is that there are many different types of prostate cancer and when it comes to treatment, “one size does not fit all.” In addition, significant personal and lifestyle preferences will affect your decision. We are here to help you work through this complex decision.

What you need to know about your diagnosis is that there is generally more good news than bad, and that each and every prostate cancer is unique. The good news is that if you are diagnosed early while the

*Bold italic words are defined in the glossary.
Your first decision may well be whether or not to treat your cancer. If your cancer is diagnosed early while still confined to your prostate, you have an excellent chance of being cured. Since each cancer is unique, an optimal treatment decision for you may be totally different for the next patient. Your urologist’s main goal is to manage the cancer with as few side effects as possible. However, not all cancers need to be treated, as some may never cause any harm to patients for the duration of their lives.

**If your cancer is diagnosed early while still confined to your prostate, you have an excellent chance of being cured.**

So, the first decision to be made is whether or not to treat your cancer. “No treatment” is not the same as ignoring the cancer. If your unique cancer is one that falls into the realm of those cancers “unlikely to do harm,” you may be a candidate for what is called **active surveillance.** In fact, 25-30% of men with newly-diagnosed prostate cancer may be candidates for active surveillance. We discuss active surveillance in detail in this guidebook and in the video.

To understand the complexity of choosing the best treatment option, let's start with a discussion of prostate anatomy, followed by a discussion of what we mean by “cancer grading” and “cancer staging.”
It is important to understand prostate anatomy when we start talking about various treatment options and the potential risks and side effects from these treatments.

The prostate is a gland that sits behind or underneath the pubic bone. It’s located between the bladder, which stores and then expels urine, and the urethra, which is like a tube or a conduit for both urine and semen. The prostate is like an orange with the bladder on one side and the urethra on the other. The urethra, which is like a drinking straw, goes right through the center of the orange, and then continues to the tip of the penis.

On the penis side of the prostate there is a valve that opens when men urinate (active voiding), and closes when the bladder is filling with urine (storage phase). This important valve is called the external sphincter. The tube that goes through the valve is called the membranous urethra. Where the bladder is attached to the prostate there is another mechanism made up of smooth muscle called the internal sphincter. This valve is affected by drugs called alpha blockers, commonly known as tamsulosin (Flomax®), doxazosin (Cardura®), terazosin (Hytrin®), and alfuzosin (Uroxatral®). These drugs relax the internal sphincter and allow it to open better, thus improving the stream and promoting better bladder emptying.
Sperm leaves the testicles and travels through the vas deferens to the prostate. The vas deferens attaches to the seminal vesicles, which are two glands located under the bladder. The point where the vas deferens joins the seminal vesicles is called the ejaculatory ducts. These ducts go through the prostate and empty into the urethra, which carries both urine and semen out of the body. During ejaculation, the internal sphincter closes, which forces the semen out through the penis.

**You can clearly see how the location of your prostate can complicate treatment and cause possible side effects such as impotence or incontinence.**

Finally, there are two nerves and arteries that are adjacent to the prostate and enter into the penis. This neurovascular bundle is necessary for erections.
Three Things to Know When Choosing Your Treatment

Cancer Grade

When we talk about cancer grade, we’re referring to what the cancer looks like under the microscope. Prostate cancer is an abnormal growth of some of the glands of the prostate. We look at the pattern, or architecture, of the glands as well as the appearance of each individual cell. The system used worldwide to describe prostate cancer is the Gleason Scoring System.

The Gleason Scoring System was developed in the 1960s by Dr. Donald Gleason, a pathologist at the Minneapolis VA Medical Center.

To determine a Gleason score we generally take 12-14 tissue samples, or biopsies. These samples are about 1-1.5 cm long and 0.2 cm in diameter. Each sample may contain varying amounts of cancer. For instance, in one core sample, normal tissue can be replaced by a small amount (say 5%) of cancer, while in another core, the entire core (100%) can be cancer. The pathologist assigns a number to each area of the cancer based on the appearance and arrangement of the glands – this is the Gleason grade.

In the past, pathologists assigned a grade from 1-to-5 to the cancerous tissue in each biopsy, however cancers are now graded on a scale from 3-to-5.
The Gleason Scoring System is used worldwide to describe what prostate cancer looks like under a microscope.

Tumors with higher Gleason scores are aggressive, grow fast, and spread.

<table>
<thead>
<tr>
<th>TISSUE SAMPLE PATTERNS</th>
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<tbody>
<tr>
<td>3</td>
</tr>
<tr>
<td>slow growing</td>
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Three is a slow-growing cancer and 5 is a fast-growing cancer. Each tissue sample can be all the same Gleason grade – such as all 3s -- or it can be a mixture of Gleason grades – such as some 3s and some 4s.

<table>
<thead>
<tr>
<th>GLEASON SCORE</th>
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<tr>
<td>3 + 4 = 7</td>
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To determine the Gleason score, the pathologist adds the most prevalent Gleason grade and the second most prevalent Gleason grade. In the example above, the most prevalent Gleason grade is 3. The second most prevalent Gleason grade is 4. This cancer has a Gleason score of 7 (3+4=7).

A man with Gleason grades of 3 in all his samples has a Gleason score of 6 (3+3). A man with Gleason grades of 4 and 5 has a Gleason score of 9 (4+5).
The Gleason score is a major factor that differentiates one cancer from another. So even though 10 men may share a diagnosis of prostate cancer, chances are, their cancers are not all the same. Some men may have cancer with Gleason scores of 6 or 7; others may have cancer with Gleason scores of 8, 9, or 10. That’s why we say that all prostate cancers are not the same and why treatments may differ from man to man.

Generally speaking, Gleason score cancers of less than 6 are no longer reported. We commonly find Gleason 6 and 7 cancers. Gleason 8, 9, and 10 cancers are less common. Cancers with lower Gleason scores are less aggressive, grow slow, and are less likely to spread. The opposite is true for higher Gleason scores. These tumors are aggressive, grow fast, and spread.

<table>
<thead>
<tr>
<th>GLEASON SCORE</th>
<th>≤6</th>
<th>7</th>
<th>8 -10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlikely to grow or spread</td>
<td>May grow or spread</td>
<td>Likely to grow or spread</td>
<td></td>
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**Risk Categories**

Another way of looking at the Gleason Scoring System is that Gleason 6 tumors are “low risk,” Gleason 7 are “intermediate risk,” and 8-10 are “high risk.” The problem is that “risk” is often poorly defined. The risk with prostate cancer is that it may grow rapidly and spread locally outside of the prostate. Or there is a risk that it will spread to other organs, specifically, but not limited to, bones and lymph nodes. In talking about risk, there is a correlation with treatment failure, which means the higher the risk, the more likely the treatment will fail. Last, there is the risk of death.

We will discuss risk categories later. There is more that goes into determining risk than Gleason score alone.

**Prostate-specific Antigen (PSA) Level**

Knowing your PSA level can also give you more good information about your cancer. Prostate-specific antigen – or PSA – is a protein produced
exclusively by prostate cells. Men with prostate cancer often have higher PSA levels in their blood. But there are also men who will have high PSA levels because of prostate enlargement (benign prostatic hyperplasia) or prostate infection (prostatitis).

Interpreting PSA levels is complicated. PSA levels can vary widely based on how these levels correlate with:

- Aggressiveness
- Existing metastases
- Potential for spread

Your doctor will help you understand your particular PSA levels. There are many factors that go into how the PSA levels are used in explaining treatment options.

**Tumor Stage**

The third important factor in determining risk is the “tumor stage.” Tumor staging can be complicated because there are so many variables including:

- Size of the tumor
- If it can be felt on digital rectal exam or seen on ultrasound
- If it is in one or both sides of the prostate
- If it is in the seminal vesicles
- If the palpable cancer extends to the side walls of the pelvis
- If it has spread to lymph nodes or bones
The staging system is called the “TNM” system:

- **T** = tumor
- **N** = lymph nodes (usually prostate cancer spreads first to lymph nodes in the pelvis)
- **M** = metastases

The T stage ranges from 1 to 4.

Stage T1 cancers are not felt on digital rectal exam or seen on ultrasound. There are 3 subclasses of T1 tumors: a, b, and c. If a man has a transurethral prostatectomy (or ”roto rooter” operation) to remove part of his prostate for non-malignant conditions such as prostate enlargement or repeated urinary tract infections and cancer is found in the specimen, then that man has either T1a or T1b staging, depending on how much cancer is detected in the surgical specimens.

- **T1a** - the number of chips (chips are pieces of the prostate removed during a transurethral prostatectomy) is less than 5% of the total volume of the specimen.
- **T1b** - the number of chips is greater than 5% of the total volume.
- **T1c** – cancer is detected by PSA, but cannot be felt on digital rectal exam.

<table>
<thead>
<tr>
<th>STAGE 1</th>
<th>STAGE 2</th>
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<tbody>
<tr>
<td>Elevated PSA</td>
<td>Nodule confined to prostate</td>
</tr>
<tr>
<td>Not felt during rectal exam</td>
<td>Felt during rectal exam</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE 3</th>
<th>STAGE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside capsule of prostate</td>
<td>Metastatic spread to lymph nodes, bone, and distant organs</td>
</tr>
<tr>
<td>Felt outside the prostate</td>
<td></td>
</tr>
<tr>
<td>Detected outside prostate by imaging</td>
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The higher the stage, the more dangerous the cancer.
Stage T2 cancers can be felt on digital rectal exam or seen on ultrasound. There are 3 subclasses of T2 tumors:

- T2a - the cancer is in half or less of one lobe (the prostate has two lobes, right and left).
- T2b - the cancer is in more than one half of one lobe.
- T2c - the cancer is in both lobes.

Stage T3 disease is when the cancer has begun to grow outside of the prostate and can be felt there, or is seen outside the prostate on ultrasound, a CT scan or MRI, or is present in the seminal vesicles. T3a is cancer that extends outside of the prostate on one side, but is not in the seminal vesicles. T3b is cancer that extends outside of the prostate on both sides, but is not in the seminal vesicles. T3c is cancer that has invaded one or both of the seminal vesicles.

Stage T3 is cancer that can be felt or seen outside the prostate on an ultrasound, CT scan, or MRI.

Stage T4 disease means that the cancer has spread further beyond the prostate and potentially involves adjacent organs like the bladder, the ureters, the urethral sphincter, rectum, or pelvic wall.

There is one more thing that needs to be added here. You will sometimes hear about “clinical” and “pathologic” staging. Clinical staging is based
on the rectal exam and core biopsy results, and occasionally imaging (ultrasound, CT, MRI). Pathologic staging is based on an examination of the entire prostate after it has been surgically removed. So, you might see a small "c" or "p" in front of the capital "T" to denote this distinction.

It’s possible that your clinical and pathologic stages might be different. For example, your tumor may be staged cT1 before surgery and pT2 after surgery, meaning that the post-op pathologic examination shows your tumor is larger than indicated by the pre-op clinical exam. This becomes important when talking about outcomes such as survival. For example, when we say “you have a 95% chance of cure from surgery if you have T1 or T2 prostate cancer” – this is referring to pathologic staging or pT1 or pT2. Patients who receive radiation or other treatments for prostate cancer in which the prostate is not removed, can only have a “clinical” stage.

“N” or node categories are staged as “N0” if the nodes have been removed and have no tumor in them, “Nx” if they cannot be assessed, or “N1” if the cancer has spread to one or more lymph nodes in the pelvis.

“M” refers to metastases. “M0” means no metastases either in lymph nodes or other organs. “M1a” means the cancer has spread beyond the nearby lymph nodes in the pelvis. “M1b” means the cancer has spread to bones. “M1c” means the cancer has spread to organs such as the lung, liver, or brain, with or without node metastases.

To summarize: the higher the grade and/or the stage, the higher the risk and the more dangerous the cancer.

Knowing your tumor grade and stage – and sometimes, your PSA – will help you understand your risk from the specific cancer that’s been detected and help you choose a treatment. Understanding the variables that play into risk may explain why your doctor may guide you in one direction rather than another.
Risk Assessment

Your cancer grade, tumor stage, and PSA level are key factors in helping you and your doctor make a decision about your treatment. It’s also helpful to know what we call “risk assessment” and “risk groups.”

We all know about risks. Every time we get on the freeway or climb a ladder we risk having an accident. It’s the same with prostate cancer. There’s the risk that the cancer will grow, or spread, or even cause death. Or it may not do any of those things. Knowing your risk can help you make a treatment decision.

Risk groups are based on grade, stage, and PSA:

- Very low risk
- Low risk
- Intermediate risk
- High risk
- Very high risk
- Metastases

Your doctor may also use a nomogram to assess your risk. A nomogram is a mathematical tool used to make predictions. In the case of prostate
cancer, nomograms are used to predict the risk that your cancer will spread or recur after treatment. A nomogram is based on detailed information about your cancer including your grade, stage, PSA, and biopsy results. It can predict your individual risk better than assigning you to a risk group.

So a nomogram can be very useful in helping you and your doctor determine a treatment approach that may give you the greatest benefit.

Finally – a word about tumor staging and how it relates to risk assessment.

Chances are, you already know your tumor stage – 1, 2, 3, or 4. Tumor stages are usually determined either before surgery or after surgery – or both. Staging before surgery is called “clinical” stage. Staging after surgery is called “pathologic” stage.

Clinical stage helps determine treatment approach. Pathological stage helps assess post-surgery outcomes.

Clinical stage is written with a small “c” before the “T.” Clinical stage is based on a rectal exam, whether or not the cancer can be felt, and imaging studies like ultrasound, CT, or MRI. Risk assessment and nomograms are sometimes based on the clinical stage of your cancer. Think of it as a kind of “baseline” assessment of your tumor stage, before surgery.

Pathologic stage is written with a small “p” before the “T.” This is the cancer stage after surgery when the prostate and surrounding tissue are removed and examined by a pathologist.

Your doctor uses various tools to determine the risk that your cancer may or may not spread or recur. Knowing your risk may well help you and your doctor determine the next steps to take in your treatment.
There are different treatment options for prostate cancer because every man is different and every prostate cancer is different.

Deciding on Treatment Options

There are a variety of treatment options for prostate cancer. Each therapy has benefits and risks; each has associated 5-, 10-, and 15-year survival probabilities both with and without cure.

Options:
1. Active surveillance
2. Surgery
3. Radiation therapy
4. Cryoablation (freezing the prostate)
5. Hormone therapy

The treatment you choose may depend on whether or not:
- Your life expectancy is greater than 10 years (based on your co-morbidities or other medical problems like heart disease, lung disease, or diabetes)
- You are in the intermediate or high-risk group
- Your cancer has a high likelihood of being confined to the prostate (that is, no T4, no lymph node or bone metastases)
If your cancer meets the criteria noted on page 20, then you would be a candidate for:

- Surgery (radical prostatectomy)
- Radiation (Intensity Modulated Radiation Therapy – IMRT, or Image Guided Radiation Therapy — IGRT) both forms of EBT, or External Beam Therapy
- Brachytherapy (implantation of radioactive seeds)
- Combination Radiation Therapy (External Beam plus seeds)
- Cryoablation (freezing the prostate)

Understanding the variables of your particular cancer may explain why your doctor may guide you in one direction rather than another.

The optimal and most appropriate treatment is based on a variety of factors. We will discuss each therapy at length.

Before we do though, it’s important to know:

- If the cancer is only in the prostate
- If the cancer is locally advanced (outside the confines or capsule of the prostate or in the seminal vesicles)
- If the cancer is in the lymph nodes, bones, or other organs

These factors definitely will affect decision making about treatment. If, at the time of surgery, the pathologist finds that the cancer is confined to the prostate (no extracapsular extension or positive margins), there is a 99% cure rate with surgery (pathologic T2 or T1). If it’s in lymph nodes
or bone, the cancer can be temporarily put into remission, but it cannot be cured.

When indicated by the PSA level, Gleason score, or clinical stage, a CT scan of the abdomen and pelvis can sometimes detect enlarged lymph nodes. A bone scan will be done to detect spread to bone. Sometimes an MRI scan will be used to detect locally advanced disease.

Assessing Risk

There are also a variety of tools, tables, and nomograms (a prediction tool) that use the variables of PSA level, Gleason Score, clinical stage, and other variables, to predict the potential for recurrence and/or progression.

The optimal and most appropriate treatment is based on a variety of factors.

These other variables include:
- PSA density
- Number of positive biopsies
- Extent of cancer in the biopsy

One online tool used to predict the likelihood that a tumor will or will not spread is the Partin Table which was developed at Johns Hopkins University. Partin Tables use the variables of Gleason Score, serum PSA, and clinical stage to predict the extent of disease. This is one of the earliest tools developed based on a large historical series of patients treated by a single surgeon. It is important to recognize that even when a cancer is outside of the prostate it can sometimes still be cured with either surgery or radiation.

Let’s look at a 65-year-old man who has a:
- PSA of 7
- Gleason Score of 4+3
- Clinical stage T2b
A Partin Table is a tool to predict the likelihood of prostate cancer recurrence or progression.

Newer methods of assessing risk such as "genomic tests" are based on the actual genes and DNA of the cancer but are still experimental.

<table>
<thead>
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<th>PARTIN TABLE</th>
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<tr>
<td><strong>Organ Confined</strong> (25)</td>
</tr>
<tr>
<td><strong>24%</strong> (19 to 31)</td>
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The Partin Table above shows the likelihood that his disease is confined to the prostate is 24%, chance of extracapsular extension is 47%, seminal vesicle involvement 19%, and lymph node metastases is 10%.

Another commonly used online predictive tool is the Kattan nomogram, developed at Memorial Sloan Kettering, from a more contemporary series of prostate cancer patients. The Kattan nomogram, which we will not discuss here, provides additional information that may help in choosing a treatment. Ask your doctor if this predictive tool is useful for you.

There are newer methods of assessing risk on the very near horizon. These are "genomic tests" (Prolaris and Oncotype Dx) that are based on the actual genes and DNA of the cancer. While early studies with these
tools are encouraging, they are still considered “experimental.” More data is needed to determine what, if any, role these tests will play in making treatment recommendations for patients.

So keep in mind that every patient and every cancer are different. Some cancers can be followed by active surveillance. Other cancers that predictably grow fast and spread can be cured with treatment if detected before local spread or metastases.

When choosing a treatment option, it’s important to understand that every treatment has both benefits and risks.

Let’s get back to cancers that are potentially dangerous but probably confined to the prostate – a situation in which the benefit of treatment will likely outweigh the risks. But how do you decide which treatment to have?

Choosing the right option or treatment can be confusing and difficult. Your decision is best made with the help of your doctors. What we are going to talk about next will help you with that discussion.
**Active Surveillance**

What is active surveillance? Why do it? Who is a candidate? What are the risks and benefits? You may hear 2 terms – active surveillance and *watchful waiting*. They are not the same.

Active surveillance is an option for managing your prostate cancer during which you will likely have:

- Periodic PSA tests, usually every 6 months
- Repeat prostate biopsies, usually at intervals of 1 to 2 years
- There are various protocols for active surveillance. PSA testing intervals and the need for repeat biopsy can vary per protocol and clinical situation.

Watchful waiting on the other hand is just as it sounds, it is waiting for the cancer to cause symptoms as a result of progression, enlargement, or spread. For all practical purposes, watchful waiting is a practice for patients who don’t need therapy.

Why do active surveillance? Because some prostate cancers are indolent. That means they are of low volume (low stage), low Gleason score, and do...
Not all cancers need to be treated.

not change over time. Men who are elderly and have less than a 15-year life expectancy, or who have multiple other serious medical problems, are likely not to benefit from treatment of low-volume, low-grade prostate cancer. Even some younger and healthy men who have very low-risk disease may not benefit from invasive treatment and would be needlessly subjected to significant side effects from treatment (impotence, incontinence, voiding difficulties, rectal, bladder or prostate bleeding).

Who is a candidate for active surveillance? There is no one set protocol for deciding who goes on active surveillance. Generally speaking, a good candidate for active surveillance will have:

- A Gleason Grade of 6 or less
- A total PSA of less than 10
- No cancer in more than 2 or 3 out of 12 biopsy cores. Within each positive core, there should be less than 50% cancer.

Some protocols use PSA density (PSA divided by prostate volume) of less than 0.15 as an inclusion criteria, because it’s been shown that the higher the PSA density is above 0.15, the greater the risk of aggressive cancer. Patients with these cancers would potentially be harmed by active surveillance. That is, they have a greater chance of benefiting from definitive treatment such as surgery or radiation.
Some prostate cancers are indolent which means they are of low stage, low Gleason score, and do not change over time.

Benefits of active surveillance include:
- Avoiding the overtreatment of cancers that are indolent and do not need to be treated
- Delaying treatment to avoid the side effects of therapy for as long as possible before definitive therapy is needed
- Eliminating the risks and side effects of definitive treatment

The risk of active surveillance is that not all Gleason 6 low-volume cancers are indolent. In fact, among this group of low-risk patients, there is a 30% risk of “progression.” By progression, we mean an increase in tumor grade (Gleason score of more than 6), volume (more than 3 biopsies positive), stage (the development of a palpable cancer on rectal exam), or the low probability of lymph node or bone metastases. This happens either because the initial biopsy missed a more dangerous tumor, or a so-called sampling error occurred (meaning the biopsies missed the tumor), or the cancer actually changed to a higher, faster growing grade.

The problem is that, at the time of the initial positive biopsy, we can’t precisely detect which Gleason 6 low-volume tumors are indolent and which are not. There are currently many scientists looking for genetic markers or molecular signatures that will help us with this problem. Studies are currently ongoing. But keep in mind, that 70% of cancers
under active surveillance will not progress to require definitive treatment, but need to be closely monitored.

If you choose active surveillance, what’s next? Generally speaking:

- You’ll have a PSA test every 6 months.
- If the PSA rises rapidly, it is usually repeated to rule out lab error and if still elevated it will be recommended that you have another biopsy. Some urologists will do a repeat confirmatory biopsy 6 weeks after the initial biopsy in certain specific and selected cases. Others will wait 6 months to a year to do a repeat biopsy.
- If the PSA doubling time is less than 2 years, another biopsy is considered. (Doubling time is the amount of time it takes the PSA to double.)
- There are various protocols for active surveillance. PSA testing intervals and the need for repeat biopsy can vary per protocol and clinical situation.

Active surveillance may help men delay treatment to avoid the side effects of therapy before definitive therapy is needed.

Depending on your age and other medical problems, treatment is often recommended if there is an increase in Gleason score above 6, or an increase in volume or stage. In some situations, however, treatment may not be recommended even if the cancer appears to have worsened.

You and your urologist need to decide if you are a good candidate for active surveillance and whether or not you are comfortable with all that is required to insure that a potentially treatable and curable cancer does not get out of control.
For prostate cancer, no matter what surgical method is used to remove the prostate, the operation is called “Radical Prostatectomy.” Surgery to remove the prostate and seminal vesicles can be done a variety of ways. When the operation is done through the abdominal wall and behind the pubic bone, it’s called “Radical Retropubic Prostatectomy.” This is the method used 99% of the time. Another much less common way of doing a radical prostatectomy is via the perineum, which is the space between the scrotum and rectum.

Your surgeon’s experience matters. It’s okay to ask your surgeon how many procedures he/she has done and the complication rate.

A radical retropubic prostatectomy can be done 3 ways:
- Laparoscopic Robotic Assisted
- Pure Laparoscopic (no robot involved)
- Open (via an incision between the belly button and pubic bone)

There are reasons for doing an open prostatectomy or even via the perineum, generally related to your physique and weight, presence of other medical illnesses, and the possibility of lymph node involvement. But 90% of modern day radical prostatectomies are done laparoscopically using the da Vinci® System, so our discussion will be mainly limited to that procedure. If your urologist is recommending an open radical retropubic
90% of modern radical prostatectomies are done laparoscopically using the da Vinci® System.

prostatectomy, he/she will explain how it differs from a robotic procedure, and the reason for preferring the open procedure.

The robotic prostatectomy procedure is done under general anesthesia. The patient's legs are in stirrups and the table is tilted so the head is down and the feet are up. There are two surgeons – one at the bedside, one at the console. Standard laparoscopic access to the abdominal cavity (this being a transperitoneal approach) is obtained and the abdomen is filled (insuflated) with carbon dioxide. Four small incisions about ½ inch long are made. Three instruments (two working and one retractor) and a camera are placed through each of the four ports. The instruments and camera are attached to the robotic arms. The camera is very sophisticated and produces a magnified 3D stereoscopic image. The surgeon who sits at the console controls the instruments with his/her hands, fingers, and feet.

A pelvic lymph node dissection may or may not be done depending on tumor grade and stage. Veins and arteries are controlled and the prostate is exposed. It is detached at the bladder neck, and the seminal vesicles are dissected free. If the nerves responsible for potency are spared, they are dissected off the prostatic capsule. Sparing the nerves is done if the tumor volume, grade, and location are favorable for sparing them. We
don’t want to leave cancer behind, so if the variables present this risk, then the dissection proceeds outside of the neurovascular bundle and this is removed with the specimen. Nerve sparing can be done on one side or both. Dissection is done in an antegrade manner. That means from bladder neck to external sphincter. The sphincter is divided a few millimeters from the apex of the prostate and the specimen is placed in a bag and removed.

The bladder then needs to be connected to the urethra at the level of the external sphincter. This is called an anastomosis. The anastomosis is done over a catheter with a running or continuous suture (as opposed to multiple interrupted sutures which is what most surgeons do during an open radical prostatectomy). The surgeon tries to make the anastomosis

Laparoscopic instruments and a 3D camera are inserted through the incisions to give the surgeon a magnified view and clear access to the prostate.
“water tight” so that urine does not leak at the suture line. A small drain is placed and the fluid goes into a small suction bulb. The operation takes 2 ½ hours on average. The estimated blood loss is about 3 ounces.

Typically, the patient stays in the hospital overnight and is released to his own home the next day, with the catheter in, where it remains for about a week. The drain may be removed, but if there is significant drainage, then he will go home with the drain in. Regular food can be eaten within a few days.

The patient is given medication for pain, bladder spasms (symptoms include feeling the need to urinate constantly due to irritation from the catheter), and a stool softener.

Risks and complications are similar to most major complex operations but occur less than 1% of the time.

Short-term complications may include:
- Major bleeding requiring transfusion
- Infection
- Urine leak
- Bowel or blood vessel injury
- Delayed return of bowel function
- Blood clots in legs and/or lungs
Long-term complications may include:

- **Incontinence (urine leak).** In large centers where many robotic-assisted radical prostatectomies are done, the risk of incontinence is between 10 and 15%. The risk of severe incontinence is less than 2%. Severe incontinence can be fixed or improved with a second operation such as an artificial sphincter or “urethra suspension” or “sling.”
- **Impotence (erectile dysfunction or ED).** ED occurs in 40-60% of patients. Multiple methods of curing or helping ED are available, ranging from drugs like sildenafil (Viagra®) to penile implants.

Both continence and ED are dependent on a patient’s age. ED factors that influence post-operative sexual function include:

- Younger patients do better
- Men with better pre-operative sexual function do better
- Whether one, both, or no neurovascular bundles are spared
- Experience and skill of the surgeon

Your surgeon will want to maximize return of continence and erectile function and there are things you can do both in the pre- and post-operative periods to help with this. Ask your surgeon what you can do.

How do you know if the surgery cured your cancer? The pathologist examines the entire prostate and seminal vesicles after they’ve been removed:

If the cancer is only in the prostate, surgical removal of the prostate offers a 95% cure rate.
surgically removed. This exam produces a “pathologic” grade and stage as opposed to the “clinical” grade and stage that were established prior to surgery. The pathologic grade and stage can be worse than or the same as the clinical grade and stage, but it will rarely be better. In other words, the pathologic exam may show that the tumor has a higher Gleason score or more volume than was indicated by the clinical exam.

After surgery, if all of the cancer is contained in the prostate, PSA becomes undetectable.

The pathologist looks at the outer margins of the prostate for cancer at the margin, this is called margin-positive disease. The pathologist will also look for cancer around nerves and cancer in blood vessels or lymph channels. Generally speaking, margin positive disease would put you at a higher risk of local recurrence, late recurrence, metastatic disease, and other problems. However, marginal positive disease does not always progress, and does not always indicate no chance for cure.

After surgery, if all of the cancer is contained in the prostate, PSA becomes undetectable. PSA is usually checked every 3-6 months during the first year post operatively, and then every 6-12 months thereafter. If the PSA is measurable and rising on 2 or 3 consecutive measures, that is considered a biochemical recurrence of the cancer. There are several options when this happens, all of which need to be discussed with your urologist, radiation therapist, and oncologist and will not be covered here.
Radiation Therapy

Radiation therapy kills cancer cells by damaging their DNA. Radiation can be delivered to the cancer and surrounding tissues externally or by implanting radioactive seeds. External Beam Radiation Therapy (EBRT) can be delivered as 3D conformal, IGRT (Image Guided Radiation Therapy), or IMRT (Intensity Modulated Radiation Therapy). Radioactive seed implantation is also called “brachytherapy.”

Optimally, radiation therapy targets the cancer and tries to avoid the surrounding tissue and organs, namely the bladder, rectum, and the ureters that connect the kidneys to the bladder. These surrounding tissues may be affected, thus explaining the potential complications.

Seed implants are appropriate for patients who have low- to intermediate-risk prostate cancer who can urinate well without significant symptoms.

Brachytherapy (Seed Implant)

Permanent radioactive seed implantation (brachytherapy) is a good treatment option for some prostate cancer patients. Patients find this treatment very convenient, since it’s a procedure that’s done on an outpatient basis, with minimal recovery time, and does not require daily treatments over a long period of time. Although this is a good treatment option, it’s not suitable for every patient. If patients do not urinate well and have significant lower urinary tract symptoms, seed implantation is not a good option. Also, if the prostate size is large (> 60 grams), the prostate may be too large for seed implantation. Some physicians have
used short-term hormonal ablation therapy (temporary medical castration – see segment below) to shrink the prostate, but this generally will not improve lower urinary tract symptoms associated with an enlarged prostate. 5-alpha reductase inhibitors like finasteride (PROSCAR®) are sometimes also prescribed to help shrink the prostate. Seed implants are appropriate for patients who have low- to intermediate-risk prostate cancer who can urinate well without significant symptoms.

During brachytherapy, radioactive seeds are placed while the patient is under either spinal or general anesthesia. After anesthesia, the patient’s legs are placed in stirrups and the prostate is imaged using transrectal ultrasonography. Needles are placed through a grid that sits on the perineum (the space between the scrotum and rectum) and has been mapped to correspond to the prostate. The small seeds are then placed through the needles starting at the base of the prostate and progressing out to the apex. Each seed can be seen on ultrasound to insure accurate placement.

If patients have more advanced disease, and are categorized as “high risk,” the effectiveness of seed implantation alone is not well studied. Most high-risk patients are treated with hormonal ablation therapy in combination with external radiation techniques.

Sometimes brachytherapy is combined with IMRT/IGRT, or brachytherapy and/or IMRT/IGRT are combined with hormone therapy. There are also
Inserted gold seeds serve as markers that show exactly where the prostate is located.

instances in which all 3 are done (tri-modality). The side effects of tri-modality therapy may be higher than single-modality treatments.

Also, if a patient has too many medical problems, and is at high risk for anesthesia, then one might consider EBRT (see below). You will need to meet with a radiation oncologist who does seed implantation in order to see if you’re a candidate for a permanent radioactive seed implant.

**External Beam Radiation Therapy (EBRT)**

Standard forms of External Beam Radiation Therapy (EBRT) are:
- IGRT (Image Guided Radiation Therapy)
- IMRT (Intensity Modulated Radiation Therapy)

Treatments generally are given weekdays for 7-8 weeks. Before the therapy is started, 3 gold seeds are inserted – it’s similar to having a biopsy. These seeds serve as markers that show exactly where the prostate is located; that’s important because the prostate moves from one day to the next. The seeds insure that the prostate is more accurately targeted and thus less radiation is administered to the surrounding tissues.

Proton Beam Therapy, with limited availability, and despite its promise, has not gained widespread acceptance as a standard curative therapy for prostate cancer largely due to very little published literature to support
any advantage with respect to survival or side effects when compared with conventional EBRT.

Complications of radiation therapy can be both short-term and long-term. Short-term complications may include:
- Fatigue
- Diarrhea
- Bleeding in the stool
- Painful bowel movements
- Urinary difficulty such as being unable to empty the bladder completely, pain with urination, urgency, and frequency

Long-term complications (even 10-20 years later) may include:
- Urinary difficulties
- Erectile dysfunction
- Bleeding in the urine or stool
- Blockage of the ureters
- Second malignancies of the bladder or rectum (rare)

Also, if a patient receives radiation then requires surgery to open the prostate channel to afford better urination (turp or "rotorooter"), surgery...
can be more complicated and healing inhibited. Last, if the radiation doesn’t eradicate the cancer, doing a radical prostatectomy is much more difficult and complicated.

How do you know if radiation works? Again, PSA is used as a marker. In response to radiation, PSA will drop. The lowest measurable level is called the PSA nadir. A rise of PSA 2 points above nadir (PSA nadir +2) indicates a biochemical recurrence of cancer. When that happens, sometimes a repeat prostate biopsy is required. Sometimes a bone scan, CT scan, or MRI will be done.

**Radiation may be a good treatment choice if you’re older or have medical problems that would be made worse by having surgery.**

Is radiation therapy right for you? It may be, it may not be. Again, it depends on a multitude of variables such as your general state of health, age, body shape and size, tumor grade and stage, overall size of the prostate, potency, previous surgeries, and more.

Every man with prostate cancer needs an individual assessment of these variables. What you desire with respect to outcome, risks, and complications needs to be considered. In some cases, surgery will offer a greater chance for cure. In other cases, there may be no difference in outcomes, that being survival with and without disease. The main difference in this case is what potential side effects and risks you are willing to accept.
Cryoablation (Freezing)

The last treatment for localized prostate cancer is called cryoablation. This procedure involves controlled freezing of the prostate to very cold temperatures. Cancer cells, normal prostate cells and the small blood vessels that supply the prostate with nutrients and oxygen are frozen. The body’s natural inflammatory system then comes in and cleans up the cellular debris. Scar tissue replaces the glandular and cancerous tissue of the prostate.

Cryoablation has been typically used to treat patients who have failed radiation therapy. This is called salvage cryo. However, improved technology has made cryo an alternative treatment for selected patients as primary therapy.

Cryoablation is an outpatient procedure done under general or spinal anesthesia. Much like brachytherapy, the prostate is accessed via the perineum with the patient’s legs raised and the feet often in stirrups (lithotomy position).

An ultrasound probe in the rectum maps the prostate. A computer generates a map, which is used to place the 6-8 cryoprobes, 5 needle thermometers (temp probes) that continuously monitor temperatures.
Freezing of the prostate is even and complete. The temp probes monitor temperature in specific and critical areas in and around the prostate. A warming catheter in the urethra keeps the prostate lining warm and prevents internal damage to the urethra.

The procedure is done twice, followed by warming. At the end of the second thaw, a catheter is placed.

The patient is discharged on antibiotics, medication for pain and bladder spasms, and sometimes a drug called tamsulosin (Flomax®), which relaxes the smooth muscle where the bladder and prostate join. Tamsulosin will help voiding function a week later when the catheter is removed. Showers are allowed the next day, and activities can be resumed in as much as they are limited by the catheter.

A week later in the outpatient clinic a voiding trial is done. 10% of patients are unable to void a week later and are taught intermittent self-catheterization.

**Cryoablation is a minimally invasive procedure, so recuperation is fairly fast and easy.**

Immediate complications may include:
- Scrotal swelling
- Numbness in the head of the penis
- Blood in the urine
- Bladder spasms
- Burning in the urethra from the catheter
- Urinary retention can occur a week later when the catheter comes out

Later complications may include:
- Erectile dysfunction, which occurs in 50% of pre-cryo potent men
- Incontinence (less than 10% of the time)
- *Urethral rectal fistula* (less than .04% of the time)
Studies show that 5-year disease-free survival of 60-78% for low- and intermediate-risk patients, and 40% for high-risk patients.

Cryoablation is relatively new (7-8 years), so 10- and 15-year outcome data are not available. However, earlier studies demonstrate 5-year disease-free survival of 60-78% for low- and intermediate-risk patients, and 40% for high-risk patients. These results are equivalent to radiation therapy. There are some studies that suggest an advantage of cryo over radiation therapy for patients with high Gleason score cancers (8-10).

There are a few caveats about cryoablation. Cryoablation is not a good alternative for men who are good candidates for surgery. Cryoablation cannot be done for clinical T3 disease. Like radiation, cryo is a possible choice for very select patients, but can also be the wrong choice for others.
Hormone Therapy

The last topic we are going to discuss is hormone therapy. In 1941, Drs. Huggins and Hodges, from the University of Chicago, discovered that the growth of prostate cells, both benign and malignant, were governed by the male hormone, testosterone. They discovered that, in dogs, if you take testosterone away by removing the testicles, the cells stop growing, shrivel up, stop making prostatic fluid, and in some cases, die. Dr. Huggins won the Nobel Prize for this work in discovering that prostate cancer is very dependent on male hormone.

Hormone therapy can be done by castration or by a long-acting drug that is injected intramuscularly. One of these drugs is called Lupron (leuprolide). Lupron works in the part of the brain called the pituitary and causes a marked decrease in a hormone that stimulates the testicles to make testosterone. Think of a field of grass and weeds. The grass is normal cells and the weeds are cancer cells. Testosterone is fertilizer to both. Without it the grass and weeds will shrivel and stop growing. Lupron will significantly reduce testosterone levels, but won’t reduce them to zero; some testosterone (about 5-10%) will continue to be made in the adrenal glands.

Another medication called bicalutamide (Casodex®), is a “blocker drug” that sits between testosterone and the cancer cell. Think of it like putting a barrier over the weeds so that the fertilizer can’t get to them.
Even though 85% of prostate cancers are sensitive to hormone therapy, regrettably, no one is cured with this treatment. Whether or not survival is improved with hormone therapy is debatable. Eventually, hormone therapy fails to cure so-called “castrate resistant” cancer. And, there are considerable short- and long-term toxicities from hormone therapy. Men need testosterone. Without it men are weak, experience muscle wasting, hot flashes, lethargy, and depression. Men need testosterone for healthy bones. There is considerable risk of osteoporosis associated with hormone therapy. Without testosterone there is no sex drive and erectile dysfunction. There is possible breast enlargement and tenderness. Hormone therapy has been linked to an increased risk of cardiac disease, diabetes, and hyperlipidemia, though this is controversial.

85% of prostate cancers are sensitive to hormone therapy, but regrettably, no one is cured with this treatment.

Sounds pretty bad, doesn’t it? So why use it at all? Well, hormone therapy is usually reserved for men who have far advanced or metastatic disease. Those men are at significant risk for problems related to metastatic disease. For example, in a patient with bone metastases, his bones are at great risk for fractures that we call pathologic fractures. If the bones of the spine are involved, the cancer can press on the spinal cord and lead to paralysis. Lymph nodes that are near the ureters (tubes that drain urine from the kidneys to the bladder) can enlarge from metastatic cancer and can block the flow of urine leading to kidney failure. This list of problems goes on and on. Suffice it to say, the risks of not treating advanced or metastatic disease is greater than the risks of hormone therapy.

That’s not the only reason we are talking about hormone therapy. There are occasions in which we want to shrink the prostate in order to enhance local therapy, as in the case of a man with the large prostate who chooses brachytherapy. There is also data to show that in a man with high grade and/or locally advanced cancer, adding hormone therapy to radiation therapy produces better outcomes than either alone.
Closing Thoughts

There is a lot here to digest. In closing, there are a few thoughts we’d like to leave you with:

1. Every man’s cancer is different. Every prostate cancer is different. Every man with prostate cancer is different. Personal preferences, desires, and lifestyles are unique. Fears and concerns are different. Treatment plans need to be individualized.

2. Not all prostate cancers need to be treated. Active surveillance is a reasonable option for some men, but requires careful observation and follow-up, because 1/3 of patients who are candidates for active surveillance will progress to a more potentially dangerous cancer.

3. Surgery is not for everybody but, for some patients, surgery is the absolute best option. Surgical cure rates for prostate cancers confined to the prostate exceed 95%. Also, robotic surgery is not for all surgical candidates. Some men are better served by an open prostatectomy.

4. For some men for whom the potential benefits of ANY treatment outweigh the risks of NO treatment, no one treatment (surgery, radiation, or cryoblation) may be more advantageous than another. Survival outcomes with or without cancer will be similar. However, the potential risks and complications are quite different.
5. For some men, one therapy may have distinct survival advantages over the others, in spite of the differences in risks and complications.

Knowing as much as you can about your cancer, will help you partner with your doctor in making an informed decision about the most appropriate treatment for you.

We hope the video and this guidebook have given you enough information about prostate cancer to enable you to talk to your urologist, radiation oncologist, medical oncologist, and primary care doctor.

Together you will arrive at the right approach for you, now that you have been diagnosed with prostate cancer.
**Glossary**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td><strong>Active Surveillance</strong></td>
<td>An option for management of localized, low-risk prostate cancer. Various protocols that are institution specific exist and dictate how often and when repeat PSA blood tests and repeat follow up biopsies are done. Roughly 30% of men will “progress” to a potentially more dangerous cancer.</td>
</tr>
<tr>
<td><strong>Anastomosis</strong></td>
<td>A connection between two things. In the case of radical prostatectomy, it is the connection between the bladder neck and urethra.</td>
</tr>
<tr>
<td><strong>Antegrade</strong></td>
<td>The direction in which things go or flow. Antegrade flow is top to bottom, head to toe, north to south, or in the case of robotic retropubic prostate surgery, from the top of the bladder to the top of the prostate. The opposite of antegrade is retrograde. In an open radical prostatectomy or perineal (the space between the scrotum and rectum) prostatectomy, the dissection is retrograde.</td>
</tr>
<tr>
<td><strong>Benign prostatic hyperplasia (BPH)</strong></td>
<td>Benign, non-cancerous enlargement of the prostate that occurs as men get older, starting in the 5th decade of life. The enlargement can squeeze or block the urethra resulting in a variety of urinary symptoms.</td>
</tr>
<tr>
<td><strong>Biochemical Recurrence</strong></td>
<td>After complete surgical removal of the prostate, all PSA producing cells, both cancer cells and benign prostate cells are removed. When all the cancer and prostate are removed, then PSA drops to undetectable levels. If the PSA becomes detectable and starts going up after surgery, this is referred to as biochemical recurrence. Since the prostate remains in after radiation therapy (all types), cryoablation, and hormone therapy, there can still be detectable levels of PSA in patients who are cured and never have a recurrence. After these therapies, the lowest level of PSA is called the nadir. There are criteria for biochemical recurrence in patients who have been treated by methods other than surgery. The two most common criteria that define biochemical recurrence are 1. Nadir plus 2; and 2. Three consecutive rises in the PSA above the nadir.</td>
</tr>
<tr>
<td><strong>Brachytherapy</strong></td>
<td>A form of radiation therapy in which radioactive seeds about the size of a small grain of rice are placed into the prostate.</td>
</tr>
<tr>
<td><strong>CT or CAT scan</strong></td>
<td>Computerized axial tomography, imaging based on a series of x-rays fed into a computer that generates cross sectional images.</td>
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</table>
Cancer grade

A description of a tumor based on what the architecture of the cells and how abnormal the cells appear under the microscope. Grading systems are different for different types of cancer. The grading system for prostate cancer was developed by Dr. Donald Gleason, a pathologist from Minnesota who died at the age of 88 from a heart attack.

Cancer-free survival

Survival without biochemical recurrence and no evidence of prostate cancer anywhere else. Different from another statistic called overall survival which is the sum of patients alive with and without prostate cancer following treatment or active surveillance.

Clinical cancer stage

Refers to whether or not the tumor can be felt on digital rectal exam; the extent to which the suspected tumor can be seen on imaging studies (though these studies are not very accurate sometimes); how big the suspected tumor is; how much of the prostate is occupied by the lump or nodule; is it in one or both lobes; can it be felt outside the prostate; can it be felt in the seminal vesicles (see definition below); is the prostate mobile on exam or fixed; and can it be detected by imaging or scans (bone, CT, MRI) in lymph nodes, bones, or other organs.

Extracapsular extension

If the capsule is like the rind of an orange, and the pathologist sees cancer outside of the rind, then there is extracapsular extension. The radiologist or urologist may suspect extracapsular extension on CT, MRI, or ultrasound, but these tests are not very accurate, though the accuracy is improving with technological innovations and greater experience.

Gleason grade

See cancer grade above. A score of 3, 4, or 5 is assigned based mainly how abnormal looking the cancerous glands in the prostate are arranged.

Gleason score

Each biopsy specimen may contain one, two, or three grades (3, 4, or 5). The score is the most commonly seen grade plus the second most common grade. An example would be a biopsy sample that is composed of 80% Gleason 3 cancer and 20% Gleason 4. The Gleason score would be 3+4 or 7. If, for example, the situation were reversed and there was 80% Gleason 4 and 20% Gleason 3, the score would still be 7, but the pathologist would report it as 4+3. The distinction is important because a Gleason 3+4 tumor is potentially less aggressive than a 4+3, even though the score is 7 in each case.

Hyperlipidemia

The presence of excess fat or lipids in the blood.
<table>
<thead>
<tr>
<th>Term</th>
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<tbody>
<tr>
<td>IGRT (Image Guided Radiation Therapy)</td>
<td>A form of external beam radiation therapy during which 2- and 3-dimensional images are used to guide the radiation beams to hit the prostate and minimize radiation to surrounding structures and organs.</td>
</tr>
<tr>
<td>IMRT (Intensity Modulated Radiation Therapy)</td>
<td>An advanced form of 3-dimensional external beam therapy using computer software and hardware designed to get maximal radiation to the prostate while at the same time minimal dose to surrounding structures and organs.</td>
</tr>
<tr>
<td>Interstitial</td>
<td>The technical definition is “between spaces or interstices” but for our practical purposes it means something put into the tissue of the prostate.</td>
</tr>
<tr>
<td>Lymph nodes</td>
<td>The lymphatic system filters the plasma in blood. Lymph channels are like small blood vessels that follow along the course of most of the blood vessels in your body. Nodes are swollen areas of tissue that help with the filtering. Cancer cells can spread via blood or lymph channels. When the cancer is in the node, it can grow and cause lymph node enlargement. This is referred to as “lymph node metastases.”</td>
</tr>
<tr>
<td>MRI (Magnetic Resonance Imaging)</td>
<td>Uses magnetic fields and radio waves to produce images of structures inside the body. These pictures can provide different information of the same structures seen on CT, Ultrasound, or traditional x-rays.</td>
</tr>
<tr>
<td>Metastases</td>
<td>Any cancerous growth that appears beyond the site of the original cancer site. Prostate cancer seen in lymph nodes, bones, liver, lung, or other organs, is metastatic.</td>
</tr>
<tr>
<td>Neurovascular bundle</td>
<td>A group of nerves, arteries, and veins that travel along each side of the prostate (outside of, but adherent to, the prostate capsule) and support the prostate, urethral (external) sphincter (see below), and penis. A “nerve sparing prostatectomy” dissects this bundle off the prostate on one side or both to enhance chances of recovery of erectile function after surgery.</td>
</tr>
<tr>
<td>Nomogram</td>
<td>A prediction tool that uses several pieces of clinical information to better determine the aggressiveness of the cancer. Some of the information might include: your PSA level, the grade of the cancer on biopsy, the clinical stage, how many needles showed cancer, etc. The nomogram can help decide which option or treatment will provide the greatest benefit.</td>
</tr>
<tr>
<td>Palpable</td>
<td>Felt by touch.</td>
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<tr>
<td>Term</td>
<td>Description</td>
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<td>-------------------------------</td>
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</tr>
<tr>
<td><strong>Prostatitis</strong></td>
<td>Infection or inflammation of the prostate. Either can cause an elevated PSA in the absence of cancer.</td>
</tr>
<tr>
<td><strong>Radical Prostatectomy</strong></td>
<td>Surgery to remove the prostate and seminal vesicles.</td>
</tr>
<tr>
<td><strong>SEER (Surveillance Epidemiology End Result Program)</strong></td>
<td>SEER is an authoritative source of information on cancer incidence and survival in the United States. SEER currently collects and publishes cancer incidence and survival data from population-based cancer registries covering approximately 28% of the U.S. population.</td>
</tr>
<tr>
<td><strong>Seminal vesicles</strong></td>
<td>Glands that produce seminal fluid, which makes up 95% of semen (the other 5% is sperm from the testes). Seminal vesicles are two glands located behind the bladder, above the rectum, and attached to the base of the prostate (just under where the bladder and prostate attach). They are removed along with the prostate during surgery (radical prostatectomy). Prostate cancer can spread to these glands.</td>
</tr>
<tr>
<td><strong>Sphincter</strong></td>
<td>There are two for our purposes, but others in the body also. Sphincters are a ring of muscle that surround an outlet, opening, or tube. During voiding, urine passes through two sphincters, the internal, where the bladder and prostate join, and the external, which is on the penis side of the prostate. After the prostate is surgically removed, the internal sphincter may no longer be functional or it may be weaker, and continence (the ability to hold urine in, stay dry, or not leak) depends more on the function and competence of the external sphincter.</td>
</tr>
<tr>
<td><strong>Ureters</strong></td>
<td>Hollow tubes or ducts that drain urine from each kidney to the bladder.</td>
</tr>
<tr>
<td><strong>Urethra</strong></td>
<td>Another hollow tube that originates at the bladder neck, passes though the prostate like a drinking straw through an orange, through the external sphincter, and then through the penis. Urine passes through this tube during urination. It is also the tube through which a catheter is passed into the bladder.</td>
</tr>
<tr>
<td><strong>Urethral Rectal Fistula</strong></td>
<td>An abnormal passageway or connection between the urethra and rectum following radiation, cryotherapy, or even surgery. It’s a two-way street – urine goes into the rectum and feces gets into the urine. Fortunately this is a very rare complication after all treatments. Symptoms include passage of air, blood, or feces in the urine. Urinary tract infections are common and difficult to treat. Surgery is frequently necessary to repair the fistula.</td>
</tr>
</tbody>
</table>
**Voiding Trial**  
After any of the treatments, your doctor wants to be sure you will be able to urinate so he/she may do a voiding trial. The bladder is filled by running water, saline, or occasionally x-ray dye, through the catheter (which is still in after surgery, brachy or cryo, or had to be placed during or after external beam therapy because of significant voiding difficulty). When the patient feels full, the catheter is removed and the patient is allowed to urinate. The amount of fluid left still in the bladder after voiding can be measured with a simple bladder scanner ultrasound or seen on x-ray if dye is used. If dye is used, sometimes small leaks from the anastomosis (see above) can be seen.

**Watchful Waiting**  
Since many small or localized or low-risk prostate cancers are not likely to harm elderly men (older than 70-75), this is a less intensive method of monitoring patients than active surveillance. There is less agreement among urologists with regard to the definition of this term and how it is different than active surveillance, so if your doctor uses this term, be sure to have him/her explain what he/she means by it, and how it differs from active surveillance.
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In recent years, there have been great strides in detecting and treating prostate cancer. The good news is that when your doctor finds prostate cancer early, your chances of survival are excellent.

This guidebook and its companion video series will help you talk with your doctor and make an informed decision together about the treatment that’s right for you.

Go to kpactionplans.org to view this guidebook and the videos online.