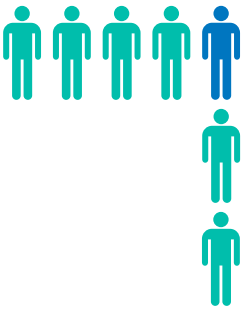
PROCURE

Halte au cancer de la prostate.
The Force Against Prostate Cancer.



PROSTATE CANCER
WHAT YOU NEED TO KNOW

YOUR DIAGNOSIS KNOCKS YOU OUT?
THIS GUIDE IS FOR YOU!

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Halte au cancer de la prostate.
The Force Against Prostate Cancer.

Founded in 2003, PROCURE is the only charitable organization in Quebec to be exclusively dedicated to the fight against prostate cancer through research, awareness, education and support for men who have this disease and their families.

IF YOU ARE DIAGNOSED

Cancer… we all know what this word signifies: a patient, sitting in front of an uncomfortable-looking doctor who must deliver the dreaded diagnosis. The patient returns home despondently, racked by a full gamut of emotions ranging from disbelief and confusion to anger, sadness and fear.

For the patient's family and friends, the news will come as a shock.

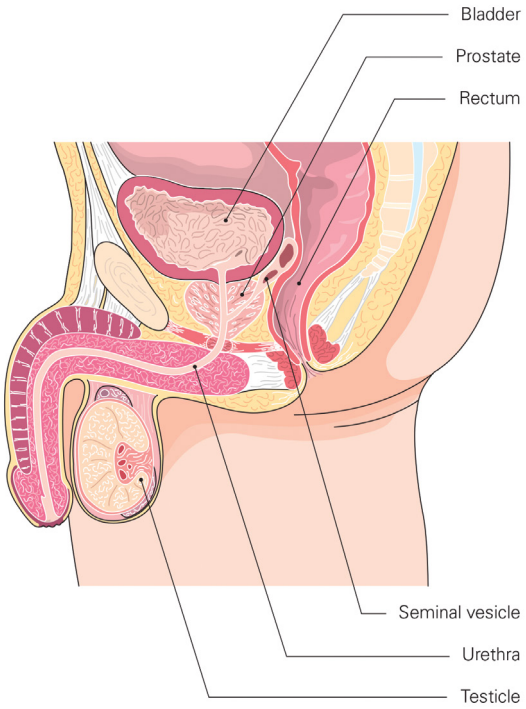
This patient is a man: uncle, neighbour, colleague; a rock singer; an executive. Just about anyone, actually. Perhaps you. This man has just been told that he has contracted prostate cancer. Beyond the initial shock, he worries about his self-worth as a man, and about his sex life and intimate relationship with his loved one. He realizes that from now on, nothing will be the same. He might want to be alone, bury his emotions and forgo any help outside of the medical setting. Yet, there is help – in particular at PROCURE – and very good reasons to remain hopeful.

ONE IN SEVEN MEN

Prostate cancer is the most common form of cancer in men. In 2013 in Quebec alone, nearly 4,600 men were diagnosed with this disease. Over the past 25 years, there has been a 30 % increase in the number of new cases, due in part to the aging population, of course, and

also to early screening. At the same time, the survival rate has also improved. Prostate cancer remains a painful experience, but the prognosis is, to a large extent, much less worrisome than in the past.

The prostate is a gland of the male reproductive system whose function is to produce most of the material that will combine with the sperm to form the semen. It has the shape and size of a walnut, and is located directly below the bladder. It surrounds the upper part of the urethra, the tube that helps discharge urine and also carries the sperm during ejaculation. The prostate plays no role in erection.



❶ Anatomy of the Prostate and the Surrounding Organs

Cancer can develop in the prostate, just as it does in the lungs, liver, brain, etc. Cancer is generally defined as a set of abnormal cells that grow in an uncontrolled manner. These cells then form masses called tumours. They can also spread to other parts of the body, forming what are called metastases. The primary causes of cancer remain unknown.

A SNEAKY FORM OF CANCER

Prostate cancer is generally "silent," which means that it is not accompanied by symptoms in most cases. Any symptoms that may occur can be similar to those of benign prostate hyperplasia (BPH). The prostate increases in volume and compresses the urethra, causing problems with urination, such as difficulty urinating, a weak stream, a frequent urge to urinate whether during the day or at night, and the feeling that the bladder is never completely empty.

These symptoms do not automatically entail a diagnosis of prostate cancer, but the doctor will probably want to make sure.

RISK FACTORS

AGE

The risk of having prostate cancer increases with age. It rarely occurs before age 50. The average age at diagnosis is 65.

FAMILY HISTORY

The risk is twice as high if the father or a brother or uncle had prostate cancer. It increases even

more if the person was still relatively young at the time the diagnosis was made. There are reports of hereditary factors in about 15 % of cases.

GENETIC FACTORS

Whether or not these factors are hereditary, they affect how cancer cells proliferate and are structured.

RACIAL FACTORS

African Americans have the highest rate of prostate cancer in the world. On the other hand, prostate cancer is almost non-existing in Asians – Japanese in particular – probably due to environmental and lifestyle factors, especially diet. According to evidence, once they settle in North America, Japanese immigrants have the same rate of prostate cancer as the rest of the population.

DIET

A strong correlation has been found between prostate cancer and a diet rich in animal fats and red meat. Polyunsaturated fats, as well as obesity and physical inactivity, have also been found by researchers to contribute to prostate cancer. Conversely, physical activity and healthy eating provide some protection against all types of cancer.

ENVIRONMENT

Various environmental factors are also increasingly scrutinized.

TESTOSTERONE

Androgens, testosterone in particular, provide the first clues to prostate cancer. These hormones, while not harmful as such, since they are crucial for the development and expression of male characteristics, do affect the prostatic tissue, regardless of its condition. This is evidenced by a regression of prostate cancer when the production of androgens is suppressed. Testosterone therefore acts as a stimulant of prostate cancer by feeding it somehow. Like breast cancer in women, prostate cancer is hormone-dependent in its early stage, although its nature may change at a later stage.

To summarize, several factors may be involved in prostate cancer, and it can be impossible to pinpoint any one in particular. Some factors call for greater vigilance, especially family history. Remember that no two cases are alike.

Any man who is over 50 years of age should discuss with his doctor the issue of prostate cancer and ask whether a digital rectal examination (DRE) and prostate specific antigen (PSA) testing are relevant in his case. If a man has a family history of prostate cancer, he should consider having such tests done as soon as his 40th birthday. For more information, please visit **procure.ca** and consult our PSA web page.

SCREENING AND STAGING

In most cases, prostate cancer is discovered by chance, as a result of a blood test or during a routine physical examination. There will be no noticeable symptoms, even if the cancer is fairly advanced.

The two main screening techniques are the digital rectal examination (DRE) and the prostate specific antigen (PSA) test. The DRE is a fairly unpleasant experience, but it is necessary after age 55. It allows the doctor to detected any concealed bumps or induration at the periphery of the prostate. Once they reach that age, all men should take this test annually, especially those who have a known risk.

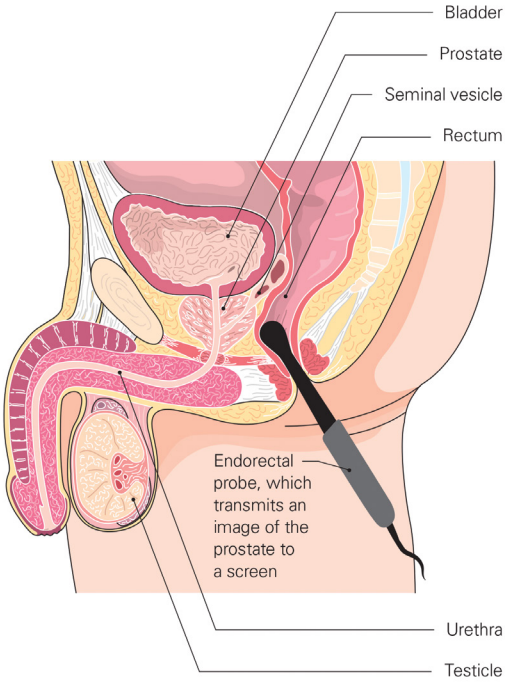
While the effectiveness of the PSA test has been disputed, its judicious use may allow an earlier detection of cancer, thus improving the chances of recovery and survival.

PSA is a protein secreted by the prostate. A minute fraction of PSA ends up in the blood stream; this is not abnormal per se. If the prostate is affected by a problem, whether cancerous or not, such as inflammation or hyperplasia, the proportion of this protein will increase. Normally, PSA levels do not exceed 4.0 ng/mL. Except in the case of inflammation or hyperplasia, a simple blood test can be instrumental in the discovery of prostate cancer.

The DRE and the PSA test are not infallible. On its own, either of these modalities can lead

to misdiagnosis. Used in conjunction, they are more likely to yield a proper diagnosis. Whatever the case, an induration felt through DRE together with PSA levels of more than 4 should be considered alarming. As a result, the doctor would normally want to investigate further. However, it is up to the patient to decide whether or not to seek treatment.

A hardening of the prostate detected through DRE or a PSA rate higher than 4 (or several tests showing an increase over a brief period) are reason enough to move to the next step – the biopsy. This is done using a small instrument inserted into the rectum in order to collect information on the conformation and volume



❶ Transrectal Ultrasound

of the prostate (transrectal ultrasonography). At the same time, a dozen samples are taken in specific areas of the gland.

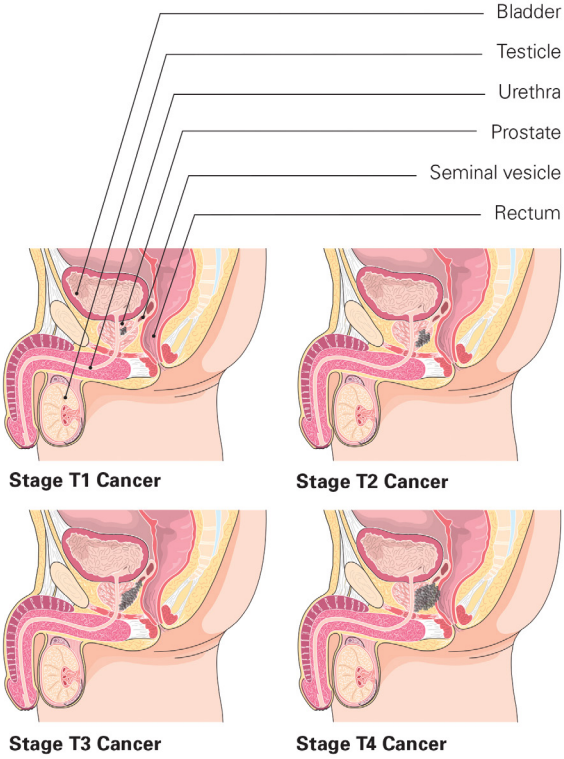
Although performed under local anaesthesia, a biopsy can be a fairly unpleasant experience. It is usually well tolerated but requires special preparation as well as a follow-up, especially due to the risk of infection. Most side effects (blood in the urine or stools, feeling unwell) disappear after a day or two.

THE GRADE

The pathologist (a specialist in human tissue analysis) will determine whether the samples are cancerous or not. If they are, the pathologist will determine the grade of the cancer, i.e. its degree of malignancy or aggression, depending on whether the shape and organization of the cells appear more or less normal. A scale of 1 to 5 will be used in the pathologist's report, where 1 means almost normal cells, 3 an average degree of abnormality and 5, a completely chaotic structure. Since cancer does not always have a homogeneous appearance, the pathologist will add the two figures corresponding to the grades most prevalent in the samples. The higher the total (the score on the Gleason scale), the more malignant the tumour and therefore, the more likely it is to progress.

Where appropriate, other examinations will be undertaken to determine whether the cancer has spread. These include investigations such as a lymphadenectomy, or lymph node dissection,

which consists in an examination of pelvic lymph node samples for cancer cells. A bone scan is often carried out for possible metastases. These would mainly involve the hipbone and the bones of the spine, producing pain in the hips and lower back. At a more advanced stage, the lower limbs may become gradually affected by numbness and even paralysis. Swollen ankles, weight loss, pallor (anemia) and fatigue will also point to bone metastases. A steep rise in PSA levels is almost always a precursor for such metastases, but not when the PSA remains below 20.



❸ Different stages of prostate cancer

For greater certainty, the internal organs will be investigated using techniques such as magnetic resonance imagery (MRI) and/or positron emission tomography (PET). An axial CT (CT-scan) is especially useful to specify the volume and shape of the prostate before radiotherapy.

STAGE	DESCRIPTION
T1	The tumour is not detectable during a digital rectal examination and is confined to the prostate.
T2	The tumour may be detected during a digital rectal examination but is confined to the prostate.
T3	The tumour is spreading beyond the prostate.
T4	The cancer has spread to nearby organs and perhaps elsewhere in the body.

Provided with the results of these examinations, the doctor is able to determine the stage or spread of the prostate cancer.

The international TNM system is used to classify the prostate cancer (T for the stage of the tumour, i.e. its size, N for nodes, M for metastases – of the bone in this case). For example "T2 N0 M0": T2 shows that the tumour is confined to the prostate, and N0 and M0 mean that neither the nodes nor the bones are involved.

TREATMENTS

The choice and duration of treatment depend on several factors:

1. Diagnostic data: PSA, stage, grade, PSA rate, presence of nodes, whether or not the cancer has metastasized in the bones;

2. Age, health status, family history, and also life expectancy: a 60-year-old patient may still have many years left, which makes early intervention especially important for him; on the other hand, an 80-year-old man can die of other things apart from prostate cancer;

3. The treatment's side effects, as compared to the results expected. The patient may even decide to forgo treatment, for instance if he fears becoming incontinent or impotent. Any questions he may have must be answered thoroughly. The decision is as much his as the oncologist's or urologist's, and he must therefore be fully informed. To learn more, visit **procure.ca** and view our web page dedicated to treatments.

The main procedures used for the treatment of prostate cancer are surgery, radiation therapy, hormone therapy and chemotherapy, either alone in combination, at the same time or separately. Depending on the type of cancer and the above factors, the goal may be to destroy the tumour, stop or slow its growth, reduce the risk of recurrence, prevent metastases and treat the symptoms of the disease, so that the patient may enjoy the best possible quality of life.

These modalities usually give very good results. Although they do not always lead to recovery and have some side effects, they do provide an adequate rate of survival. Most people know about the "magic number" of five years disease-free (remission). However, full recovery is never assured, which is why patients should continue to be monitored for a long time. On the other hand, a relatively close follow-up may be sufficient, for instance if the patient's life expectancy is less than 10 years or in the presence of a localized slowly evolving cancer, as is often with prostate cancer. In such a case, care is provided only if it is needed, for example with a sudden rise in PSA.

Delayed treatment requires regular monitoring with DRE and PSA tests and regular biopsies. Each of the care protocols described below also requires close monitoring.

RADICAL PROSTATECTOMY

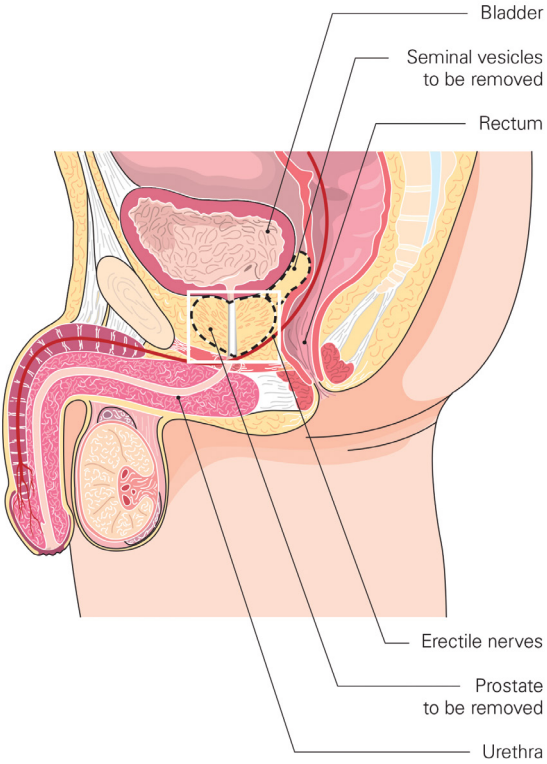
For cancer at an early stage, that is to say, localized or confined within the gland, the recommended treatment is radical prostatectomy, or removal of the prostate including seminal vesicles (small pockets next to the prostate). This operation takes about two hours and is done under general or local anaesthesia according to the method used:

1. Open or conventional surgery with incision in the lower abdomen;

2. Laparoscopic surgery, with three or four small openings in the abdomen for inserting

instruments and a mini-camera (the surgeon operates while watching a screen);

3. Robotic laparoscopic surgery. This technique allows the removal of the prostate using tiny, flexible, precise instruments operated from a console. It is performed only in a few large hospitals.

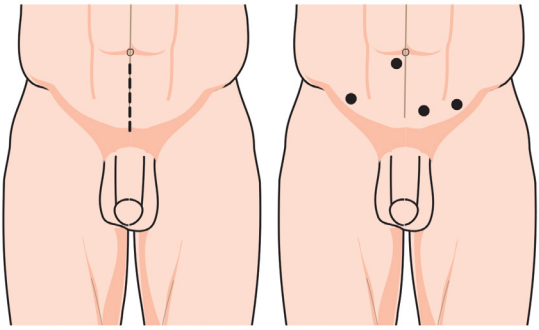


❶ Radical Prostatectomy

It is also possible to remove the prostate through the perineal area (between the scrotum and anus), but it then becomes impossible to take a sample from the lymph nodes, a procedure that is often necessary to establish whether the cancer cells are confined or not within the

prostate. As a result, this method is not used quite as often.

Regardless of the modality used, the surgeon will endeavour to preserve as much as possible both neurovascular bundles (nerves and blood vessels), located on either side of the prostate, which play a crucial role in erection. These might become damaged during the operation or may have to be sacrificed due to the volume, malignancy or proximity of the tumour.



❷ Radical Prostatectomy by Open Surgery and Laparoscopy

In the days or weeks following surgery, the pathologist will determine the extent of cancer cells in the excised tissues and establish the grade of the cancer. This information will determine whether further treatment – radiotherapy or hormone therapy, for example – is required.

At the time of surgery, a catheter is inserted into the urethra up to the bladder and stays there for a few days, until the tissues heal. Drains will

also be used to evacuate the liquids (blood and lymph) that may accumulate at first.

Incontinence problems are likely in the next weeks and months, as well as issues with erectile capacity, even if the neurovascular bundles were preserved. In the majority of cases, the situation will gradually return to normal. If these problems persist or are slow to resolve, it is possible to seek help.

To learn more about these issues, do not hesitate to consult our web page dedicated to side effects on **procure.ca.**

There are two important points to note. First, the ability to have orgasms remains. Libido is preserved, except where hormone therapy was used. Secondly, in the absence of the prostate or seminal vesicles there is no more ejaculation, since the deferent ducts that transport the sperm from the testicles to the urethra have also been cut.

A man whose prostate has been removed can no longer father a child. If this is a problem, the patient can have his semen preserved in a sperm bank before the operation.

RADIOTHERAPY

EXTERNAL BEAM RADIOTHERAPY

External beam radiotherapy (EBRT) is another possible treatment if the cancer is confined to the prostate. If the cancer is more advanced or aggressive, hormone therapy may be suggested

before or after radiotherapy as the case may be. As previously mentioned, EBRT may complement a prostatectomy to reduce the risk of local recurrence.

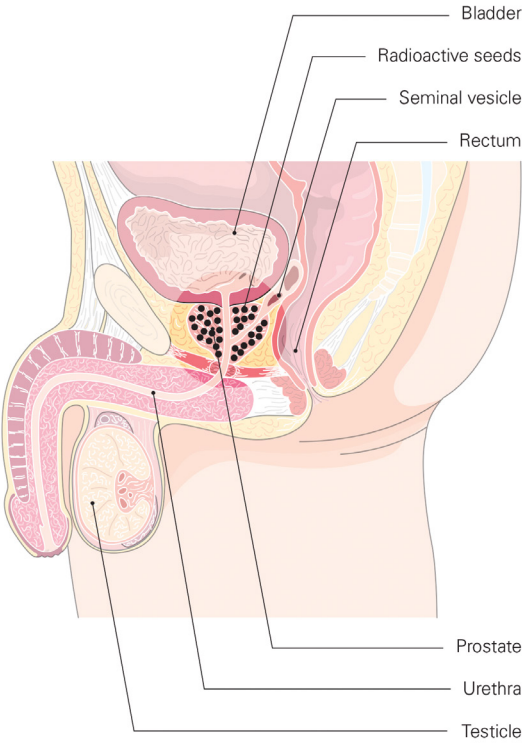
A powerful device – a particle accelerator – generates radiation that destroys cancer cells and stops them from spreading. The treatment takes place over a variable number of sessions (five weekly sessions for six to eight weeks), during which the patient is exposed to ionizing beams carefully measured or modulated and accurately directed towards the tumour and seminal vesicles. Great care is taken to protect the neurovascular bundles and neighbouring organs, especially the bladder and the rectum.

Each time, a restraining device adapted to the patient's morphology is used to keep him still under the system from beginning to end of treatment. Each session lasts only three or four minutes. The patient can then go about his usual activities if he is not too tired.

The effects of EBRT are gradual – they depend on the number of sessions and the dose administered. In addition, they continue long after the cessation of treatment because the cancer cells die out over several months. It often takes up to a year to generate measureable results.

BRACHYTHERAPY

Brachytherapy consists in implanting permanent or temporary radiation sources in the prostate, sometimes in combination with



❹ Brachytherapy

hormone therapy and rarely with external beam radiotherapy. There are two forms of brachytherapy: the permanent placement of fifty small radioactive seeds in the prostate, or the insertion of twelve to fifteen needles through which two or three doses of radiation are administered before their removal.

Other than requiring a much smaller number of hospital visits and being less demanding on the body, brachytherapy has a great advantage: it spares the surrounding healthy tissue. However, it is counter-indicated if the prostate is too large. It should be noted that the patient who undergoes brachytherapy does not become "radioactive."

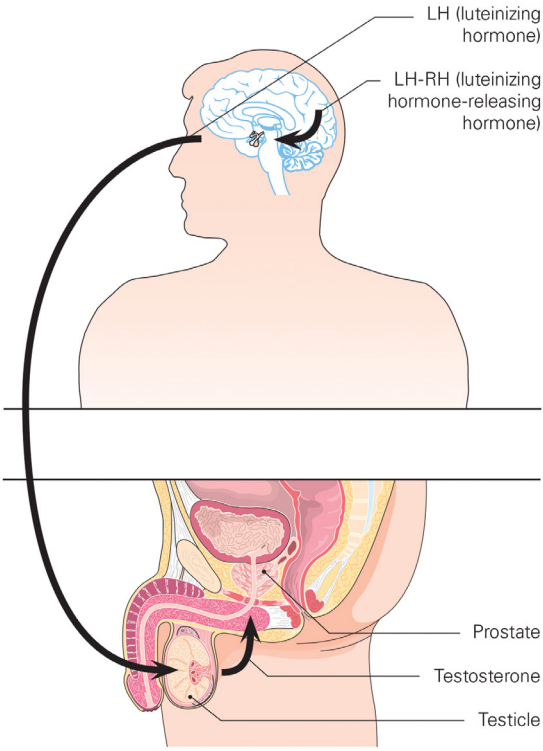
There are other techniques, such as cryotherapy (destruction of cancer cells by cold) and treatment with high intensity focused ultrasound (destruction by a sudden rise in temperature), but they are rarely used or if so, on an experimental basis.

Each of these methods has its benefits and side effects, mostly urinary incontinence and erectile dysfunction for a while. In the majority of cases, the situation returns to normal after a while. These problems may also become apparent at a later date. Solutions do exist. For more information, talk to your doctor or consult our YouTube channel on our website **procure.ca**.

HORMONE THERAPY

Prostate cancer is stimulated by androgens, first and foremost testosterone, which accounts for approximately 90 % of male sex hormones. Hormone therapy aims at preventing the stimulation of cancer cells. It can take the form of an irreversible surgical castration (removal of both testes) or, more often, a reversible medical castration. The latter consists of a temporary or permanent course of regular injections using synthetic compounds whose effect is to counteract the production of testosterone by the testes. Deprived of testosterone, the prostate shrinks and the tumour may also recede.

Hormone therapy is sometimes used before radiotherapy when appropriate to reduce the volume of the prostate, since a smaller prostate is easier to treat with radiotherapy.



❶ The Hormonal Pathway

It may also be used together with a prostatectomy if doctors fear that the cancer cells may have spread elsewhere in the body or if there is risk of recurrence more generally.

Hormone therapy exerts its action throughout the body. Its duration varies from a few months to a few years according to the grade and stage of the cancer and the rate of PSA. It is not a cure, but it can slow the progression of the disease and relieve its symptoms.

In cases of advanced cancer affecting the lymph node or distant metastases – or if there is a

recurrence – hormone therapy may be carried out indefinitely, and it is then equivalent to surgical castration.

The main sides effects are loss of libido, impotence, weight gain, hot flashes, fatigue, decreased muscle mass and osteoporosis. Again, similar to other therapies, it is important to weigh the pros and cons. Which side does the scale tip? The answer to this difficult question belongs to the patient once he has discussed with his urologist or oncologist.

CHEMOTHERAPY

If PSA levels continue to rise despite hormone therapy, and if a CT scan or bone scan shows bone metastases, quality of life and pain management issues take precedence. By interfering with cell division, chemotherapy kills the cells that multiply most quickly, especially cancer cells. This action takes place throughout the body. The drugs used are selected according to the features of the disease, the patient's general condition and how he reacts to them. Sometimes, chemotherapy may improve his physical condition substantially and even prolong his life. Also, there are now some promising new palliative agents.

In addition to benefiting from the latest advances in medical science, the patient may be offered the opportunity to participate in research protocols on screening methods, therapeutic approaches, and experimental drugs. Taking into account everything that has

been done in these areas over the last ten or fifteen years, he may feel that we are getting closer to the day when prostate cancer is beaten.

When he was first diagnosed, the patient felt his stomach drop. He was living a nightmare and felt surrounded by darkness. Very early on, however, he was supported by doctors, specialists, and nurses. His condition was explained to him, and he felt he was in capable hands. He could also rely on his loved ones and receive all the help he needed from organizations such as ours.

Gradually, he overcame his fears and regained a taste for life. He set out on this journey resolutely and filled with courage. Things will never be quite the same again, but he will see them with fresh eyes, more mindful and serene. Hope will be reborn.

QUESTIONS TO ASK YOUR HEALTHCARE TEAM

Many people feel anxious when being diagnosed with prostate cancer. The following list of questions can help you get the information you need most about the treatments available to you. Feel free to bring this list and a family member or friend with you to your next doctor's appointment. You can also write down some of your own questions in the space provided.

1. At what stage is my cancer? Has it spread beyond my prostate?
2. Is my cancer slow growing enough for monitoring (active surveillance)?
3. What are my treatment options considering my age and health status?
4. Among all the treatments, how do I know which one is best for me?
5. Which option do you recommend? Why?
6. Can you explain what this treatment entails?
7. What side effects am I most likely to have? Are they permanent?
8. Will I experience a loss of bladder control? Problems with erections? For how long?
9. What can I do to manage these side effects?
10. What are the chances that the treatment will be successful? When and how will you know?
11. What are my options if the treatment does not produce results?
12. Where and when will I have the treatment? How long will it take?

13. What will the recovery be like?
14. Will the treatment affect the quality of my sex life?
15. What impact will this treatment have on my quality of life?

OTHER QUESTIONS

GLOSSARY

Androgens: Male sex hormones, the main one being testosterone.

Biopsy: Removal of cell samples using fine needles; these cells are then sent to a laboratory to determine if they are cancerous.

Bone scan: Nuclear medicine imaging study that utilizes a radioactive compound that is injected into a vein to identify areas of increased bone cell activity in the skeleton; it is used to screen for the presence of bone metastases.

BPH (Benign Prostatic Hyperplasia): Common, non-cancerous condition where the prostate becomes enlarged and blocks the urethra or bladder; BPH may cause symptoms similar to those caused by prostate cancer.

Brachytherapy: Treatment that consists in placing tiny radioactive seeds into or near the tumour to destroy the cancer.

Catheter: Tube inserted into the opening of the penis to drain urine from the bladder; it is used during prostate surgery or other procedures.

Chemotherapy: Drugs used to destroy rapidly growing cancer cells and reduce the volume of tumours.

Cryotherapy (cryosurgery): New form of prostate cancer treatment in which thin needles are inserted into the prostate to destroy cancer cells using extremely cold gases.

CT scan (Computed Tomography Scan): Test that uses a computerized machine to take a picture of a certain area of the body.

Erectile dysfunction (ED): Inability to achieve or maintain an erection that is adequate for sexual activity.

Gland: Organ that produces fluid.

Gleason score: Sum of the two grades usually represented in prostate samples biopsied; the higher the Gleason score, the more likely it is that the cancer will grow and spread rapidly.

Grade: Labeling system indicating how abnormal the cancer cells look under a microscope and how quickly the tumour is likely to grow and spread.

Grading: System for classifying cancer cells in terms of how abnormal they appear when examined under a microscope.

Hormone-dependent: Refers to a tumour whose growth is stimulated by a hormone (e.g. testosterone in the case of prostate cancer).

Hormone therapy: Treatment using drugs to interfere with hormone production or hormone action, or the surgical removal of hormone-producing glands.

Incontinence: Partial or total inability to control urine flow, resulting in urine leakage.

Laparoscopic surgery: Form of surgery in which a small probe is inserted into the body to create a picture of a specific area.

Lymphatic system: System of vessels, nodes and other organs that fights infection, brings nourishment to cells and gets rid of cell waste.

Lymph nodes: Small masses of tissue located along the lymphatic vessels of the body (e.g. the groin, armpits and neck) that act as filters to help fight infections.

Lymphadenectomy: Surgical removal of the lymph nodes.

Metastasis (or metastasized): Cancer that has spread to a different part of the body than the one in which it started.

MRI (Magnetic Resonance Imaging): Test which uses a magnetic field and radio waves to create detailed pictures of areas inside the body.

Perineum: Area between the anus and scrotum.

Prostate: Gland at the base of the bladder that helps control urine flow and ejaculation, produces part of the fluid in semen, and makes PSA, a protein that may indicate potential prostate cancer at high levels.

PSA (Prostate-Specific Antigen): Protein made by the prostate that may indicate potential prostate cancer at high levels.

Radiation: Treatment where high-energy rays (such as x-rays) are directed at a tumour to destroy cancer cells.

Radical prostatectomy: Surgical removal of the entire prostate.

Robotic-assisted laparoscopic surgery: Technology that deploys the use of robotic instrumentation and 3D imagery of the operating site when removing a cancerous prostate gland through a series of small incisions.

Seminal vesicle: A gland that helps produce semen.

Stage: A classification of prostate cancer that describes the size of the prostate and how far a tumour has spread.

Testosterone: A hormone that promotes the development and maintenance of male sex characteristics.

TNM (tumour-nodes-metastasis) staging: International method of staging cancer, including prostate cancer.

Transrectal ultrasound: Test that uses sound

waves to produce a sonogram; ultrasound allows your doctor to look closely at your prostate for abnormal areas.

Tumour: Mass of tissue formed from the buildup of extra cells. Not all tumours are cancerous.

Urethra: Tube that passes from the bladder to the penis and carries urine and semen.

Watchful waiting/active surveillance: Program of ongoing testing and examinations to closely monitor the state of a patient's prostate cancer, without immediate treatment for prostate cancer.

NOTES

NOTES

Images provided courtesy of Annika Parance Publishing

PROCURE

For over ten years, PROCURE strives to redefine the boundaries of research and knowledge through an ongoing dialogue with the public and healthcare community by providing the information and support needed through means such as:

- a rich and comprehensive website, available in French and in English;
- a Prostate Cancer Support & Awareness Network across the province of Quebec;
- conferences and special events;
- publications and a free book on prostate cancer.

PROCURE has also established a biobank of biological samples and data on men with prostate cancer.

Please join our organization today. Encourage the men in your life to be examined. This might very well save their life!

If you wish to donate to our cause, financially or otherwise, or to request more information about prostate cancer, please contact us.

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