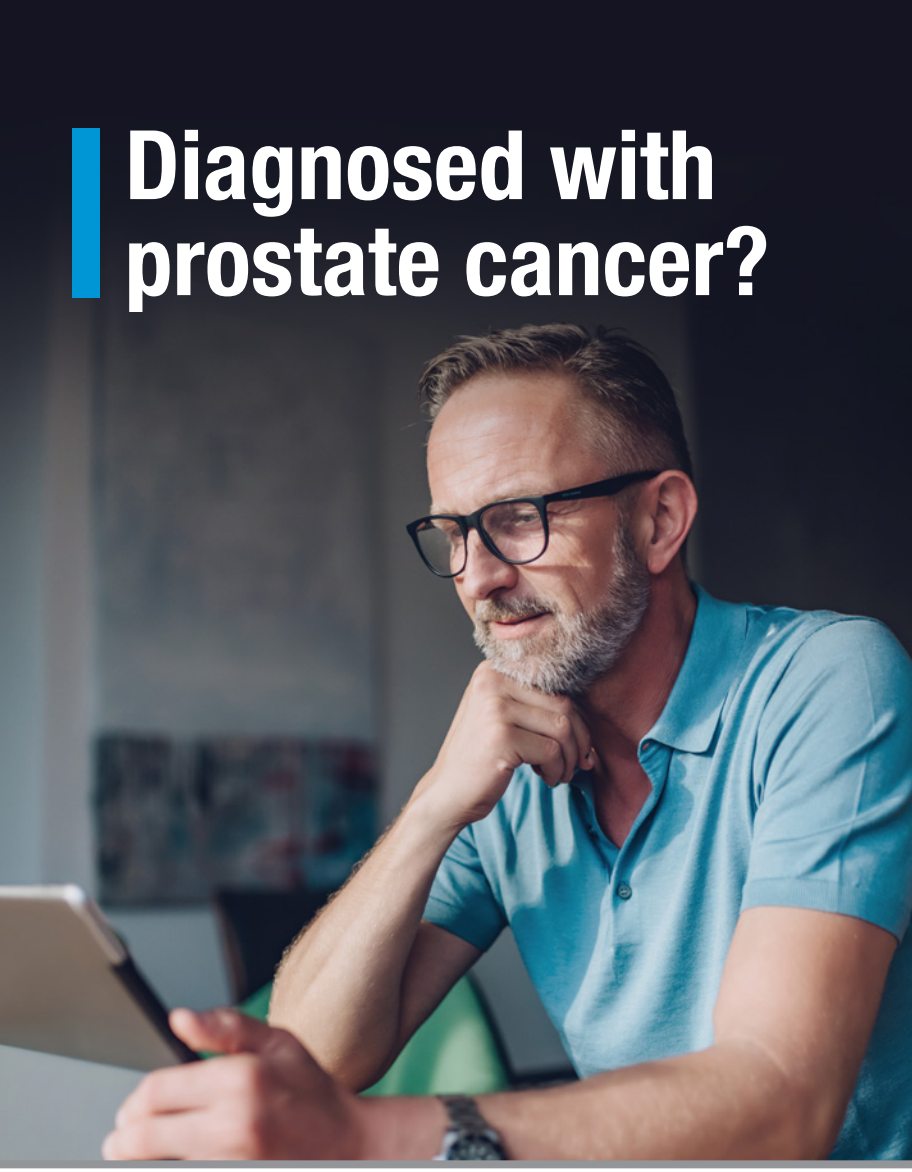
Diagnosed with prostate cancer?



Making informed choices about treatment

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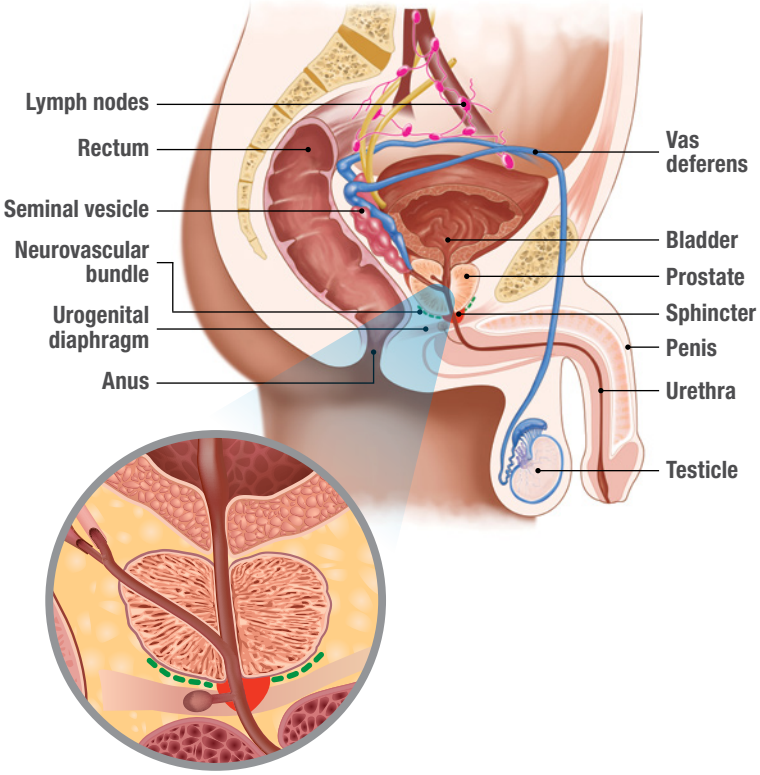
After receiving a prostate cancer diagnosis, and once you have a better understanding of your situation and the choices that lie ahead, you will be able to take an active role in your treatment.

The information contained in this booklet is designed to provide facts to help you make informed choices about your condition and the treatments used to manage it.

What is cancer?

Cancer is a disease characterized by the uncontrolled growth and potential spread of abnormal cells. The human body is made up of trillions of cells. Genes inside each cell order it to grow, work, reproduce and die. Normally, our cells obey these orders and reproduce themselves by dividing so that cell growth occurs in an organized and controlled fashion. But sometimes the instructions get mixed up, causing the cells to grow abnormally and become a mass called a tumour. Some tumours are benign (non-cancerous); others are malignant (cancerous).

Where is the prostate gland and what does it do?



The prostate is about the same size and shape as a walnut, and it is divided into two lobes similar to the two halves of a walnut. It is located below the bladder and in front of the rectum. It surrounds part of the urethra, which is the canal where urine passes from the bladder to outside the penis. The primary role of the prostate is to produce fluid that mixes with sperm from the testicles to make semen, which is also transported by the urethra out through the penis. The prostate gland plays a key role in fertility and reproductive ability in men. It produces an important protein called prostate-specific antigen (PSA), which can be measured in the blood.

What is prostate cancer?

The growth of a benign tumour in the prostate (benign prostatic hyperplasia) may interfere with body functions, such as urinating, but these benign growths are not related to cancer. On the other hand, a malignant tumour of the prostate invades surrounding tissues. By a process called metastasizing, malignant cells may break away from a cancerous tumour in more advanced prostate cancer and spread through the blood and lymph to other parts of the body, such as the lymph nodes and bones, where they can form new cancerous tumours. It is therefore important to find malignant tumours as early as possible. Prostate cancer can also exist without being able to identify a mass within the prostate.

What causes prostate cancer?

There is no single cause for prostate cancer, but certain factors appear to increase the risk of developing it:

- Advancing age
- A family history of prostate cancer
- African ancestry

It is possible that many men who have none of these risk factors still develop prostate cancer. Scientists are also studying possible additional risk factors, including the effects of diets that are high in fat, dairy products, red meat, genetic factors, being overweight or obese, working with certain chemicals, and smoking, among others.

What role does testosterone play?

In its early stages, prostate cancer is usually a hormone-dependent cancer. This means that it requires male hormones (called androgens) in order to grow. Testosterone, which comes mainly from the testicles, is the most important androgen in the body. Depending on the stage of prostate cancer, treatment may be directed toward stopping androgen production or blocking androgen activity.

What are the symptoms of prostate cancer?

Men with prostate cancer may have no symptoms in its early stages. Those who have either an enlarged prostate gland or advanced prostate cancer may complain of some of the following symptoms:

- Frequent urination (especially at night)
- Urgent need to urinate
- Difficulty in starting or stopping urinary stream
- Weak or slow urine stream
- Feeling of not emptying bladder
- Pain or burning during urination
- Painful ejaculation
- Blood in the urine or semen

These symptoms may exist in patients who do not have prostate cancer.

Why is it important to detect prostate cancer in its early stages?

Early detection of prostate cancer improves the chances of successful treatment. Keep in mind that prostate cancer is a common form of cancer among men and it is very important to have regular check-ups, including a blood test to verify your PSA level, and to see your doctor if you have any of the symptoms outlined above.

What does your diagnosis mean?

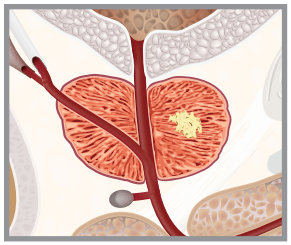
It is important to understand your diagnosis so that in consultation with your doctor, you can make informed choices about the treatment plan that is most suitable for you.

In addition to your age and health status, other factors may be considered in deciding on treatment options for your situation:

- Clinical stage (how far the cancer has progressed)
- The tumour grade or Gleason score (how fast the cancer is growing) and
- PSA level

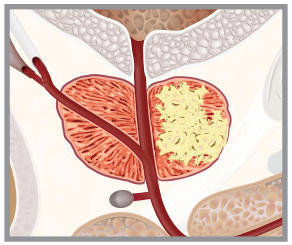
TNM* staging of prostate cancer

Clinical stage refers to the size of the tumour felt during a digital rectal examination (DRE) and the extent to which it has spread in the prostate and beyond.



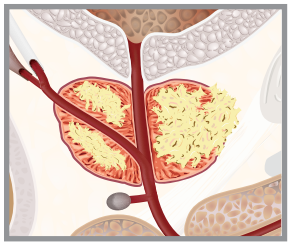
Stage T1

Tumour cannot be felt during a DRE and is not visible during imaging.



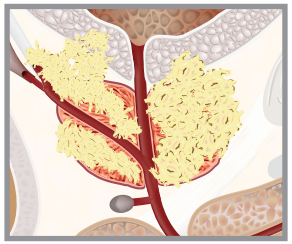
Stage T2

Tumour is confined to the prostate, can be felt during a DRE and involves half or less than half of one side of the prostate (T2a); more than half of one side (T2b); or both sides (T2c).



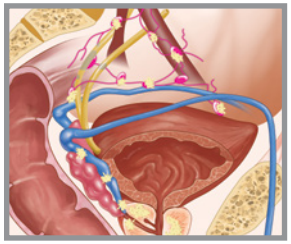
Stage T3

Tumor extends through the prostate on one or both sides (T3a); involves seminal vesicles (T3b).



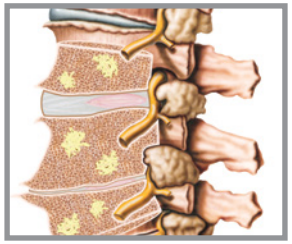
Stage T4

Tumour extends to nearby structures other than the seminal vesicles, such as bladder or rectum.



Stage N1 – lymph node involvement

Cancer has spread to nearby lymph nodes.



Stage M1 – metastasis

Distant metastasis to bones (seen in this image) or to other organs outside the prostate has occurred.

* TNM by **T**umour, lymph **N**ode, **M**etastasis.

Understanding your treatment options

There are various options available for the treatment of prostate cancer, depending on things such as age, general health and disease characteristics (grade, stage and PSA). This guide is designed to give an overview of treatments for prostate cancer. You will need to discuss these options with your doctor who will help you determine which one is most suitable for you.

Active surveillance

What it is

Active surveillance is the close observation and monitoring of the prostate cancer. Depending upon the patient's age and health, this may be an option if the cancer is small, slow growing, low-grade and poses little threat.

What is done

The cancer is monitored to see if it is growing or not, using a physical exam (including DRE), PSA tests, bone and prostate scans (such as MRI) and prostate biopsies. How often these tests are done depends upon the patient's age and the other characteristics of the prostate cancer.

What to expect

Based upon PSA results, DRE findings and degree of symptoms, the doctor will reassess the status of the patient's health every few months. If there is evidence of progression in the prostate cancer, for example an increase in grade of the cancer, the doctor will advise the patient of possible treatment interventions.

Side effects

There are no direct side effects to active surveillance, although some men may experience increased anxiety related to the examinations.

Surgery: Radical prostatectomy

What it is

Radical prostatectomy is a surgical procedure that removes the prostate and seminal vesicles with the aim of curing the cancer. Surgery is suitable for otherwise healthy patients whose disease is believed to be confined within the prostate gland.

What is done

Surgery is usually performed through an incision in the lower abdomen; in some centres, it may be done laparoscopically through several small incisions with or without the aid of a robot. The operation is performed under anesthesia and usually takes two to four hours.

Robotic radical prostatectomy is a less invasive type of surgery in which the surgeon sits near the operating table and uses remote controls to move robotic arms equipped with a camera and fine surgical instruments that remove the prostate through small cuts.

Nerve-sparing radical prostatectomy avoids damaging the nerves to the penis, which reduces the risk of erectile dysfunction. Although this option is available with any of the approaches used, the surgeon will decide if nerve-sparing surgery is possible when they see the prostate and tumour during surgery. It is generally more successful with early stage prostate cancer and in younger, sexually active men.

What to expect

Patients can expect a hospital stay of one to four days. They would leave the hospital with a catheter so that the urine can drain out of the bladder. This is usually removed in one to two weeks.

Side effects

Many men will have some temporary urinary incontinence (being unable to control urine) after the catheter is removed; this control usually returns over a period of many months. Many men will have a decrease in or loss of ability to get or maintain an erection after surgery, which may be permanent or temporary. If these side effects persist, there are often ways of improving them.

Radiation therapy
1) External beam radiation therapy (EBRT)

What it is

The use of radiation from a machine outside the body to eradicate cancer cells. EBRT may be suitable for patients whose disease is early stage, meaning it is confined within the prostate gland.

What is done

Beams of high-energy rays are delivered from a number of different angles to focus on the prostate, and, depending on the stage of cancer, the seminal vesicles and/or lymph nodes as well. This technique minimizes the damage to the surrounding structures, such as the bladder and rectum. Treatment is usually given once a day for up to eight weeks. Stereotactic body radiation therapy (SBRT) is a type of EBRT that delivers large doses of radiation to a certain precise area, such as the prostate. The entire course of treatment can be delivered in one to two weeks. As each person (and his prostate) is shaped differently, an individual treatment plan is devised to determine the number of treatments, the radiation beams to be used, which angles are best and how to best protect the normal cells in the surrounding area.

What to expect

The first appointment involves planning the therapy. In some patients, fiducial markers are first inserted into the prostate to help localize the prostate during radiation treatment. The patient then undergoes a CT scan and/or MRI to allow the doctor to see exactly the size and shape of the prostate. The patients can expect to be placed in exactly the position (on their back) in which they will have their treatment. The patients will remain fully awake for the fifteen to thirty minute treatment sessions.

Side effects

Radiation can cause bowel problems, such as diarrhea, sometimes with blood in the stool, and rectal leakage. Urinary side effects can include increased urgency and frequency of urination as well as a burning sensation while urinating. Erectile dysfunction and problems with ejaculation may also occur. Some patients may complain of fatigue.

Radiation therapy
2) Brachytherapy

What it is

Brachytherapy is the use of radioactive material placed directly into the prostate to destroy cancer cells. There are two types of brachytherapy: low-dose rate (LDR) brachytherapy requires implantation of permanent radioactive seeds into the prostate. This is usually only an option if the cancer is relatively early stage and slow growing (such as low-grade tumours). High-dose rate (HDR) brachytherapy consists of temporarily inserting radiation directly into the prostate using catheters connected to a radiation source. In higher grade prostate cancer, brachytherapy can be combined with EBRT.

What is done

In LDR brachytherapy, small radioactive seeds, each about the size of a grain of rice, are inserted into the prostate using a needle. Each seed delivers low doses of radiation to the prostate over several weeks or months and after treatment is finished, the seeds are left in the prostate permanently.

In HDR brachytherapy, needles that contain catheters are inserted directly into the prostate. The needles are then removed, but the catheters stay in place to deliver a high dose of radiation to the prostate. The procedure lasts about one hour and a single treatment of radiation usually takes ten to twenty minutes, and the catheters are removed after treatment.

What to expect

Brachytherapy is performed under general or spinal anesthesia and may require an overnight hospital stay. Brachytherapy may require a temporary catheter to be reinserted for urine drainage after the intervention.

Side effects

The side effects associated with brachytherapy are similar to those of EBRT for most urinary symptoms, such as frequency, urgency and burning sensation. Possible bowel problems, such as rectal pain, burning and/or diarrhea, and erection and ejaculation problems may also occur.

Hormonal therapy

What it is

Hormonal therapy involves removing, suppressing or blocking the male hormone (testosterone). Hormonal therapy is another term for androgen deprivation therapy (ADT). It is used to treat cancer that has spread or is at risk of spreading beyond the prostate or is recurring after initial treatment. It can also be used prior to and with radiation therapy in some patients.

What is done

Medication can be given by injection periodically to suppress the testicles from producing testosterone, or can be taken by mouth to block the effects of testosterone. Oral medication is sometimes used in addition to injections. Alternatively, surgical removal of the testicles can be performed.

What to expect

- **Injections:** The frequency of injection depends on the particular drug used. The duration of treatment can vary from a few months to indefinitely.
- **Oral treatment:** Daily pill(s) alone or in combination with injections. Treatment may go on indefinitely, or be limited to a period of time.
- **Surgical removal of the testicles (orchiectomy):** Speed of recovery and side effects will depend mainly on the type of surgery and on the patient's overall health. The operation takes approximately one hour and is performed under general or spinal anesthesia.

Side effects

- **Injections:** Hot flashes, impotence, loss of desire for sex, anemia, fatigue, and breast tenderness. Bones may become weaker.
- **Oral treatment:**
  - **Antiandrogen therapy (first generation):** Nausea, diarrhea, breast tenderness and liver dysfunction.

– **Antiandrogen therapy (second generation):** Extreme tiredness, hot flashes, diarrhea, headaches, pain, not feeling hungry, constipation, lung infections, swelling, shortness of breath, weight loss, high blood pressure, dizziness and vertigo.

- **Surgical removal of the testicles:** Hot flashes, impotence, loss of desire for sex, anemia, fatigue and breast tenderness. Bones may become weaker.

Chemotherapy

What it is

Chemotherapy can destroy cancer cells that have spread to other parts of the body or have stopped responding to hormonal therapy. It can also be used to relieve pain and symptoms of advanced prostate cancer. Chemotherapy can be used in combination with other therapies.

What is done

Chemotherapy is administered by intravenous infusion often given once per month for several months.

What to expect

Chemotherapy drugs are usually administered at a hospital.

Side effects

The most common side effects with chemotherapy are fatigue, nausea, vomiting, diarrhea and hair loss. A change in sense of taste and touch is also possible. There is an increased risk of infections and anemia because of lower blood cell counts.

Bone metastasis

What it is

When prostate cancer spreads to other parts of the body, it most often spreads to the bones.

What is done

- **Bisphosphonates:** Usually given as an infusion for the treatment of patients with documented bone metastasis from solid tumours, including prostate cancer. Bisphosphonates may help strengthen bones.
- **Monoclonal antibody therapy:** Injections used to increase bone mass and prevent bone fractures and pain in men receiving androgen deprivation therapy when cancer has spread to the bone.
- **EBRT:** Also referred to as spot (or palliative) radiation, to target painful sites in the bones.
- **Radioactive medication:** Intravenous injections that can be used in men with castration-resistant prostate cancer showing symptoms that the cancer has spread to the bone.

What to expect

- **EBRT:** A short course of radiation therapy is often used for bone metastases. This usually means that it is given once a day for five days. Alternatively, a single radiation treatment may be given.
- **Radioactive medication:** Usually, an injection into a vein is given once every four weeks for a total of six injections.

Side effects

- **Bisphosphonates:** Depending on the type of drug, dose and length of treatment, common side effects may include flu-like symptoms, diarrhea, nausea and heartburn.
- **Monoclonal antibody therapy:** The most common side effect is low levels of calcium in the blood. Other less common side effects include poor appetite, constipation or diarrhea, fatigue, muscle or joint pain, nausea and vomiting.
- **EBRT:** Side effects will depend on the area of bone being treated and the length of treatment. The most common side effect to the bone is a temporary increase in pain before it gets better or goes away completely.
- **Radioactive medication:** Diarrhea, nausea, vomiting, skin reactions, bone marrow suppression and platelet deficiency in the blood.

In summary

Prostate cancer is a complex disease. There are many personal and cancer-related factors that might influence the best choice of treatment for each individual. Hence, it is important to learn as much as possible about prostate cancer and the available treatment options, including all potential side effects. This will allow you to have an informed discussion with your physician and make a treatment plan that works best for you.

Definitions you need to know

Androgen: Male sex hormone that controls the growth, development and function of the male reproductive system, which includes the prostate. Testosterone is the main androgen.

Biopsy: Removal of tissue samples for examination; used to diagnose and assess the presence of cancer.

Bone scan: An imaging test, which determines if the cancer has spread to the bones.

Clinical stage: Assessment of the size and extent of the tumour, in particular whether it is confined within the prostate. It also involves assessing the lymph nodes adjacent to the prostate and whether the cancer has spread to other areas of the body (TNM system: "**T**umour, lymph **N**ode, **M**etastasis").

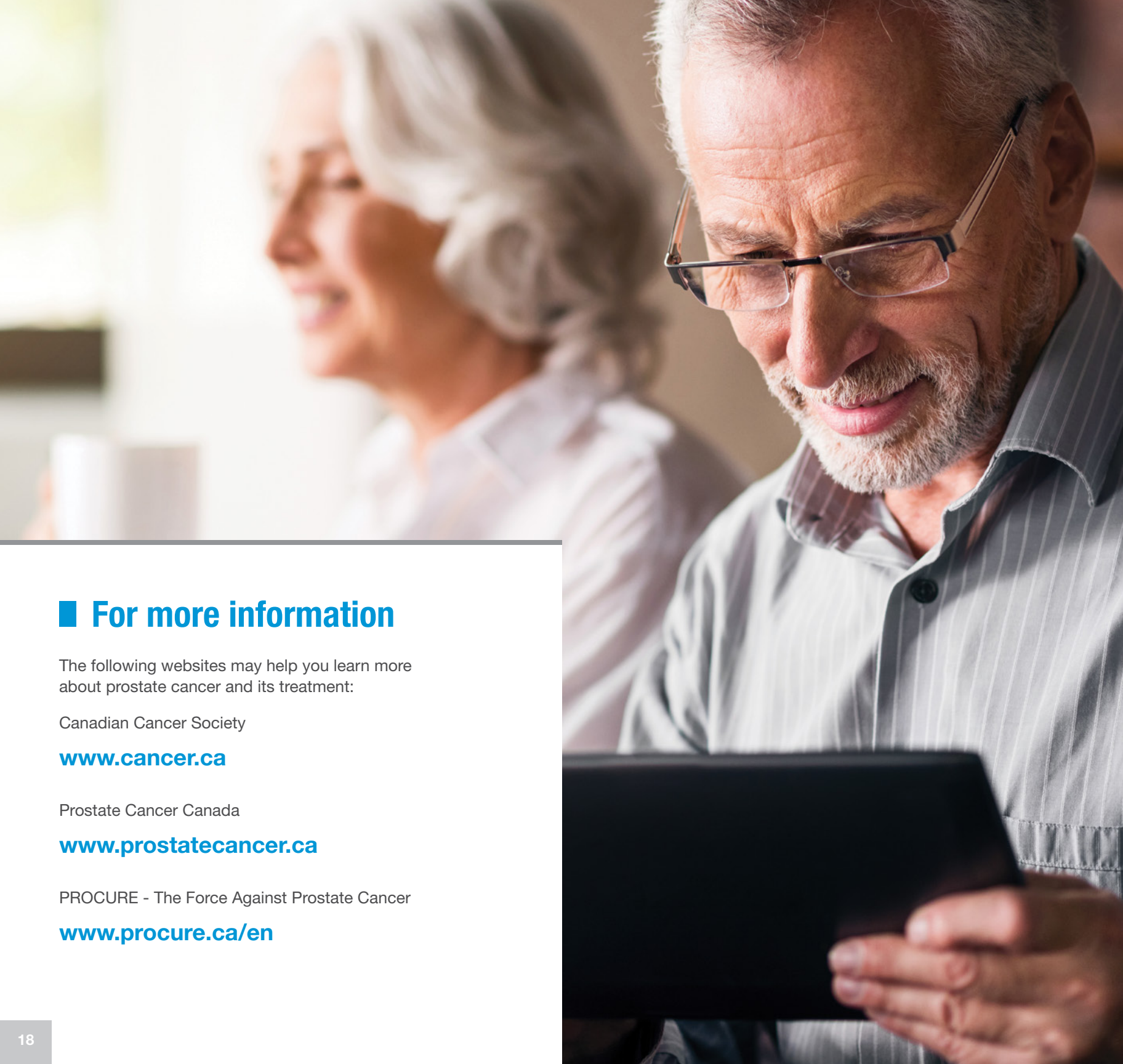
DRE: Digital rectal examination; a physician inserts a lubricated gloved finger into the rectum to feel for a prostate tumour.

Gleason score: A system the pathologist uses when examining the prostate sample (biopsy). The pathologist looks at the pattern of the cancer cells to assess the grade or degree of aggressiveness of the cancer and gives a score out of 10. Scores of 6 are considered low grade (less aggressive), 7 intermediate grade (moderately aggressive) and 8 to 10 high grade (most aggressive).

Malignancy: Describes a tumour as being cancerous (malignant); a *benign* tumour is non-cancerous.

Metastasis: The spread of cancerous cells from a tumour to other parts of the body.

PSA: Prostate-specific antigen; a protein that is produced by normal or malignant prostate cells; measured by a blood test, it is also used to monitor tumour growth, measure effects of treatment and indicate disease recurrence.



For more information

The following websites may help you learn more about prostate cancer and its treatment:

Canadian Cancer Society

www.cancer.ca

Prostate Cancer Canada

www.prostatecancer.ca

PROCURE - The Force Against Prostate Cancer

www.procure.ca/en

The information found in this booklet has been endorsed by:

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