



# Hormone therapy for prostate cancer

Hormone therapy is a way to help control your prostate cancer. This therapy removes or blocks your testosterone, the major male sex hormone.

## What is hormone therapy?

- With prostate cancer, your prostate gland grows cells that are not normal.
- These abnormal cells may spread to tissues around the prostate or to other parts of the body (often lymph nodes or bones).
- Hormone therapy can help to:
  - Control your prostate cancer.
  - Reduce or prevent your symptoms.
  - increase how much longer you might expect to live.

## What are hormones?

- Hormones are chemical messengers that are produced naturally by some glands in the body. (See diagram: *Organs involved in testosterone production.*)
- The testicles produce testosterone, which is the major sex hormone of men (**androgens**).
- The brain produces the luteinizing hormone releasing hormone (**LHRH**)

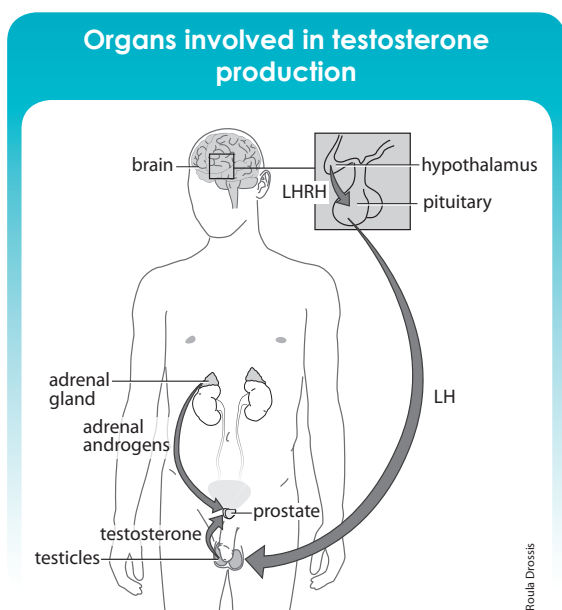
- **LHRH** then causes the pituitary to release luteinizing hormone (**LH**) which makes the testicles produce testosterone.
- The adrenal glands also produce some androgens.
- The prostate gland needs male hormones to grow and help with its work.

## What do androgens do?

- Androgens affect many body activities such as hair and muscle growth, bone health, and sexual function.
- Without androgens, many prostate cancer cells would die off or become inactive.
- Hormone therapy for prostate cancer causes your body to stop making testosterone or block your body's ability to use testosterone.
- Hormone therapy can have an effect on prostate cancer even if the disease has spread outside of the prostate.

## When might my doctor choose hormone therapy for my prostate cancer?

- You may receive hormone therapy after radiation or surgery if your prostate cancer comes back.
- Although it is important to understand that hormone therapy is not a cure for prostate cancer:
  - It may control your prostate cancer for years.
  - It is possible that the cancer cells may change so that they can grow without androgens (called **castrate resistant prostate cancer**).
  - If this happens, you may need to start other medications
- If your prostate cancer is still early, hormone therapy may be combined with radiation therapy (called **adjuvant hormone therapy**).



- Most often, hormone therapy is used to treat advanced or metastatic prostate cancer.
  - Metastatic prostate cancer is cancer that has spread from the prostate to other parts of the body.
- Your doctor will closely check on the effect of hormone therapy by keeping an eye on your health and your PSA levels.
  - PSA is a protein made by the prostate gland.
  - A blood test can show the level of PSA in your blood.

- Anti-androgens are often used before starting injections with an LHRH agonist to stop testosterone from being produced.
  - Important to note that the first injections of an LHRH agonist will temporarily increase the production of testosterone.
- Newer antiandrogens (also called second generation antiandrogens) have been shown to improve survival in men with metastatic prostate cancer or castrate resistant prostate cancer.
 

Second generation antiandrogens include enzalutamide, apalutamide and darolutamide.

## Are there different kinds of hormone therapy?

### Orchiectomy (removing your testicles)

- When your testicles are taken out (called orchiectomy), you lose the ability to make most of your male hormones.
- Orchiectomy is a non-risky surgery.
  - You are an outpatient in a hospital.
  - Your doctor takes out your testicles through a small cut (incision) in the skin of your scrotum.
  - There should be little pain after surgery.
  - You may have mild swelling or bruising.
  - Usually, you may go back to your normal activities in a few weeks.

### Blocking LH release from the pituitary

- Some men would rather block hormones being produced by the testicles than remove the testicles themselves.
- This is called androgen deprivation therapy (**ADT**).
- ADT uses either an **LHRH agonist** or an **LHRH antagonist**.
  - These drugs blocks LH from being released by the pituitary gland (See diagram: *Organs involved in testosterone production*)
  - Blocking LH from being released prevents your testicles from making testosterone.
  - These drugs need to be injected regularly
- **Orchiectomy, LHRH agonists and LHRH antagonists can be effective for controlling your prostate cancer.**

### Blocking testosterone from being used

- Although **anti-androgens** (taken orally) will block how androgens work, they will not stop the hormones from being produced.
  - Anti-androgens are combined with an LHRH agonist, antagonist or orchiectomy.

### Blocking androgen synthesis

- Abiraterone acetate is a drug which blocks an enzyme needed for the production of testosterone.
  - Abiraterone acetate is given in combination with an LHRH agonist, antagonist or orchiectomy.
  - It also always given in combination with a small dose of a steroid that is given once or twice a day.
  - Similar to second generation anti-androgens, abiraterone acetate improves survival in men with metastatic prostate cancer.
- If you have metastatic prostate cancer, your doctor will discuss treating you with either abiraterone or a second generation antiandrogen (enzalutamide, apalutamide or darolutamide).

## Are there side effects with hormone therapy?

*When surgery or medication blocks males hormones, there can be side effects.*

- It is common for men to have **hot flashes**, much like those that women get with menopause.
  - There is treatment for them if they bother you.
- Since androgens are important for your sex drive and performance:
  - Men on hormone therapy often lose interest in sex.
  - You may also have difficulty getting an erection.
  - Luckily, there is treatment help with erections.
- Since mild anemia (low red blood cell count) is common with hormone therapy:
  - You may have less energy or feel fatigued.
  - Your muscles may not feel as strong.
- Over time bones may become thinner (osteoporosis).
  - Thinner bones may break or fracture more easily.
  - Calcium and vitamin D supplements can sometimes help against thinner bones.

- Medications (bisphosphonates) might help keep bones from thinning.
- It is recommended that the strength of your bones is monitored using a bone mineral density test.
- You may have a slightly higher risk of blood clots when you are on hormone therapy and have cancer.
  - Blood clots could cause a stroke or heart attack.
- Some doctors may recommend **intermittent hormone therapy** (treatment that breaks up therapy: on/off) by:
  - Balancing the control of your cancer while keeping down the side effects.
  - Giving an LHRH agonist or antagonist for a specific period of time or until PSA levels drop and the cancer is blocked as much as possible.
  - Treatment is then stopped to let the body produce testosterone again.
  - Stopping treatment also allows any side effects from the medication to disappear (but this may take months).
  - Over time, the cancer will probably become active again (for example PSA levels will rise).
  - Your PSA levels are often used to decide when to restart the LHRH agonist or antagonist.

## What happens with hormone therapy?

- If you have symptoms of prostate cancer (such as disease spreading into the bones), hormone therapy will start right away.
- There are different expert views on how to use hormone therapy if you do not have any symptoms.
- **Early treatment** - Some experts believe that hormone therapy should be started:
  - At the first sign of disease activity (usually if you have rising PSA levels after surgery or radiation)
  - Before symptoms develop.
- **Deferred treatment** - Other experts feel that treatment can be delayed for months or even years:
  - Without increasing your risk
  - To avoid the side effects of treatment
- Scientific studies are looking at the best timing for hormone therapy for prostate cancer.
- Hormone therapy is given continuously (not intermittently) if patients have metastatic disease.

### Bottom Line

- Hormone therapy can be an effective way to control prostate cancer.
- You may be symptom-free and live a healthy life for many years.

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