

# Androgen deprivation therapy (ADT) for prostate cancer

Hormone therapy is a common treatment for many men with prostate cancer. It is also called androgen deprivation therapy (ADT). This information sheet explains hormone therapy and the side effects you may experience.

## What are androgens?

Androgens are male sex hormones. Most are made in the testes (testicles). Androgens are needed for:

- the physical changes that happen to boys during puberty
- normal reproductive and sexual function in men.

Androgens can also make cells in the prostate gland grow. This includes cancer cells as well as normal cells. The two main androgens are:

- testosterone
- dihydrotestosterone (DHT).

## What is androgen deprivation therapy (ADT)

ADT controls cancer cells by reducing androgen levels in the body. This can shrink or slow the growth of prostate cancers.

ADT can be used to shrink a prostate cancer before radiation therapy, or to control the cancer if it has spread beyond the prostate. It may be used with radiation therapy or other anti-cancer drug treatment. Your doctor will discuss which type of ADT will work best for you.

## Types of ADT

There are several types of ADT, which work in different ways:

- tablets or injections that reduce the production of testosterone
- surgical removal of the testes (orchidectomy) to stop the production of androgens
- tablets that block the effect of androgens called antiandrogens.

Androgen deprivation therapy is given for different stages of prostate cancer. It may be used:

- to reduce the risk of the cancer spreading
- to reduce the risk of the cancer coming back after treatment e.g. radiation therapy
- if the cancer has spread outside the prostate gland
- in advanced cancer to slow the growth or spread of the cancer, or to control symptoms
- for men who are not able to have surgery

## ADT medications

There are two main classes of medications:


- **Gonadotrophin-releasing hormone (GnRH) agonists or antagonists:** These are used on their own or in combination with anti-androgens. They work on the pituitary gland to reduce the production of testosterone. They involve an injection or an implant placed under the skin and include:
  - goserelin (Zoladex®)
  - leuprolide (Eligard®, Lucrin®)
  - triptorelin (Diphereline®)
  - degarelix (Firmagon®)
- **Anti-androgens:** These are used in combination with GnRH agonists to block the effects of androgens produced by the adrenal gland. These come as tablets or capsules and include:
  - abiraterone (Zytiga®)
  - enzalutamide (Xtandi®)
  - apalutamide (Eryland®)
  - darolutamide (Nubeqa®)
  - bicalutamide (Cosudex®, Calutex®)
  - cyproterone (Androcur®, Cyprone®, Procur®)

## Side effects of ADT treatment

Although ADT is effective in managing prostate cancer, it can cause a range of side effects (see table below) that may impact on your quality of life. A number of these side effects can be reduced by having a healthy lifestyle.

Everyone gets different side effects, and some people will have more problems and others will have less. Usually side effects can be managed or controlled.

Some side effects can take a long time to get better after treatment finishes. Some side effects can be permanent. It is important to tell your doctor or nurse if you get any side effects so they can help you.


Side effect	Things you can do	Things your doctor may do
 <b>Sexual dysfunction</b> <ul style="list-style-type: none"><li>• This side effect is common and usually occurs within the first few months of ADT</li><li>• Reduced or loss of libido (lack of interest in sex)</li><li>• Impotence (trouble getting, or keeping, an erection)</li><li>• Infertility (difficulty or inability to father a child)</li></ul>	<ul style="list-style-type: none"><li>• Discuss sexual dysfunction with your doctor prior to commencing treatment</li><li>• Talk about the changes and your feelings about sex with your partner</li></ul>	<p><b>Impotence:</b> Medication may be given to assist with erectile dysfunction/impotence. Other potential treatments include:</p> <ul style="list-style-type: none"><li>• intracavernosal injections (an injection into the base of the penis)</li><li>• penile implants</li><li>• vacuum constriction devices</li></ul> <p><b>Infertility:</b> Preservation treatment may be available (ie storing sperm for a later time)</p>




### Osteoporosis/bone health

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| <ul style="list-style-type: none"><li>• Osteoporosis is where the bones become thin, weak and fragile. This side effect is common and is more likely to happen the longer you are on ADT</li><li>• Over time, ADT may result in lower bone mineral density (BMD) and increase the risk of osteoporosis and bone fractures</li><li>• Osteoporosis may begin within months of starting ADT treatment</li><li>• Joint or bone pain</li></ul> | <ul style="list-style-type: none"><li>• Regular exercise, especially weight-bearing, strength and mobility exercises. It is important to include some resistance training (with weights), discuss this with your health care team first</li><li>• Reduce your alcohol intake</li><li>• Stop smoking</li><li>• Eat a balanced diet</li><li>• Take calcium and vitamin D supplements as prescribed by your doctor</li><li>• Tell your doctor or nurse if you get any pain in your bones or joints</li></ul> | <ul style="list-style-type: none"><li>• Osteoporosis risk should be assessed before starting ADT</li><li>• A bone mineral density (BMD) test is done before you start and while you are having treatment</li><li>• Calcium and vitamin D supplements should be started with ADT</li><li>• Treatment with a bisphosphonate or denosumab injection may be required. These are medications used to prevent fractures. Dental review should occur before you start these treatments.</li><li>• Refer you to an exercise physiologist or a physiotherapist</li></ul> |
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Side effect	Things you can do	Things your doctor may do
 <b>Hot flushes</b> <ul style="list-style-type: none"> <li>• This side effect is common</li> <li>• A sudden rush of warmth in the face, neck, upper chest and back</li> <li>• May be associated with sweating and flushing (redness of the face)</li> <li>• Hot flushes may last for a few seconds or up to an hour</li> </ul>	<ul style="list-style-type: none"> <li>• Wear loose, light-weight clothing and use light-weight bedding</li> <li>• Take cool showers</li> <li>• Reduce your alcohol intake</li> <li>• Stop smoking</li> <li>• Eat a balanced diet and exercise regularly</li> <li>• Some vitamins and natural remedies may help but always check with your doctor first</li> </ul>	<ul style="list-style-type: none"> <li>• Medication (hormonal and non-hormonal treatments) can be prescribed by your doctor to help manage hot flushes</li> </ul>

 <b>Changes in appearance and strength</b> <ul style="list-style-type: none"> <li>• These side effects are common</li> <li>• Increased body fat (weight gain)</li> <li>• Changes to breast tissue (increased breast size and tenderness)</li> <li>• Decrease in penile &amp; testicular size</li> <li>• Changes in hair growth (thinning of hair)</li> <li>• Decreased muscle mass and strength</li> <li>• Difficulty in standing from sitting</li> <li>• Frailty, weakness or have difficulty with balance</li> </ul>	<ul style="list-style-type: none"> <li>• Regular exercise, especially weight-bearing, strength and mobility exercises It is important to include some resistance training (with weights)</li> <li>• Reduce your alcohol intake</li> <li>• Stop smoking</li> <li>• Eat a balanced diet</li> </ul>	<ul style="list-style-type: none"> <li>• Refer you to an exercise physiologist</li> <li>• Refer you to a physiotherapist</li> <li>• Refer you to a dietitian</li> <li>• Refer you to an endocrinologist</li> </ul>
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 <b>Fatigue</b> <ul style="list-style-type: none"> <li>• This side effect is very common</li> <li>• Feeling tired</li> <li>• Lack of energy</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise regularly and eat a balanced diet</li> <li>• Make sure you have plenty of rest throughout the day</li> <li>• Plan activities so they aren't rushed</li> <li>• Make sure you do the most important tasks first</li> <li>• Do more when you have energy</li> </ul>	<ul style="list-style-type: none"> <li>• Check for the causes of fatigue, for example, anaemia</li> <li>• Review your medications</li> <li>• Develop a fatigue management plan</li> </ul>
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## Side effect

## Things you can do

## Things your doctor may do



### Emotional and cognitive changes

- These side effects are less common
  - Decrease in cognitive performance (reduced ability to concentrate, memory problems)
  - Depression (reduced mood)
  - Mood swings (eg being short tempered or teary)
- Maintaining a healthy lifestyle with a balanced diet and regular exercise can help with tiredness and mood
  - If you are feeling down, talk to a support person or your doctor
  - Cancer Council has support on **13 11 20**
  - Prostate Foundation Australia has a nurse specialist on **1800 22 00 99**
- Treatment with medications may be required for mood or anxiety
  - Refer you to a psychologist or other support service



### Risk of diabetes and heart disease

- These side effects are less common and are more likely to happen the longer you are on ADT
  - Exercise regularly and eat a balanced diet to keep within a healthy body weight range
  - Stop smoking
  - Reduce your alcohol intake
- Check your blood pressure, cholesterol and blood glucose regularly
  - Prescribe treatment as required



### For more information:

#### Andrology Australia:

[healthymale.org.au/files/resources/androgen\\_deprivation\\_therapy\\_fact\\_sheet\\_healthy\\_male\\_2019.pdf](http://healthymale.org.au/files/resources/androgen_deprivation_therapy_fact_sheet_healthy_male_2019.pdf)

#### Cancer Council NSW:

[cancercouncil.com.au/prostate-cancer/management-treatment/androgen-deprivation-therapy/](http://cancercouncil.com.au/prostate-cancer/management-treatment/androgen-deprivation-therapy/)

#### Better Health Victoria State Government:

[betterhealth.vic.gov.au/health/conditionsandtreatments/prostate-cancer-androgen-deprivation-therapy](http://betterhealth.vic.gov.au/health/conditionsandtreatments/prostate-cancer-androgen-deprivation-therapy)

#### American Cancer Society:

[cancer.org/cancer/prostate-cancer/treating/hormone-therapy](http://cancer.org/cancer/prostate-cancer/treating/hormone-therapy)

For information for patient and carers scan the QR code



E: [feedback@eviq.org.au](mailto:feedback@eviq.org.au)  
W: [eviq.org.au](http://eviq.org.au)

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Contact your doctor if you have any concerns.

