



Androgen deprivation therapy (ADT) is a common treatment for many men with prostate cancer. This information sheet explains what ADT is, the medications you may receive and the side effects you may experience.

## What is androgen deprivation therapy (ADT)

Androgen deprivation therapy (ADT) is a type of hormone therapy commonly used in treating men with prostate cancer. It controls cancer cells by reducing androgen levels in the body. This can affect cancer cells and the new blood vessels that supply them.

ADT can be used to shrink a prostate cancer before radiotherapy, or to control the cancer if it has spread beyond the prostate. It may be used with radiotherapy or chemotherapy. Your doctor will discuss which type of ADT will work best for you.

## What are androgens?

Androgens are the male sex hormones. The most common of these is testosterone. 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.

## Types of ADT

ADT reduces androgen levels in one of two ways. It either stops the body making testosterone or blocks the effects of testosterone on cells and tissues.

The options for ADT are:

- surgery to remove the testicles (orchidectomy) and stop them producing testosterone
- medications that interfere with androgens.

## ADT medications

There are two main classes of medications:

- **Gonadotrophin-releasing hormone (GnRH) agonists or antagonists:** These 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®) and
  - 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 and include:
  - bicalutamide (Cosudex®, Calutex®)
  - cyproterone (Androcur®, Cyprone®, Procur®)
  - flutamide (Flutamin®)
  - nilutamide (Anandron®)
  - abiraterone (Zytiga®)
  - enzalutamide (Xtandi®)

## Side effects of ADT treatment

Although ADT is effective in managing prostate cancer, it can cause a range of side effects (summarised on pages 2 and 3) that may impact on your quality of life. A number of these side effects can be reduced by adopting a healthy lifestyle.

# Androgen deprivation therapy (ADT) for prostate cancer

## Side effects of ADT treatment

Side effect	Things you can do	Things your doctor may do
<p><b>Sexual dysfunction</b></p> <ul style="list-style-type: none"> <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> <li>• Sexual dysfunction is common and usually occurs within the first few months of ADT.</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 (i.e. storing sperm for a later time).</p>
<p><b>Osteoporosis/bone health</b></p> <ul style="list-style-type: none"> <li>• ADT may result in lower bone mineral density (BMD); therefore, increasing the risk of osteoporosis and bone fractures.</li> <li>• You may experience frailty, weakness or have difficulty with balance.</li> <li>• Osteoporosis may begin within months of starting ADT treatment.</li> </ul>	<ul style="list-style-type: none"> <li>• Regular exercise, especially weight-bearing, strength and mobility exercises. Also try to include some resistance training (with weights).</li> <li>• Decrease alcohol consumption.</li> <li>• Stop smoking.</li> <li>• Eat a balanced diet.</li> <li>• Take calcium and vitamin D supplements as prescribed by your doctor.</li> </ul>	<ul style="list-style-type: none"> <li>• Osteoporosis risk should be determined before starting ADT.</li> <li>• A bone mineral density (BMD) test will be conducted prior to commencing treatment, and throughout treatment.</li> <li>• Calcium and vitamin D supplementation should be commenced with ADT.</li> <li>• Treatment with a bisphosphonate or denosumab injection may be required. These are medications used to reduce pain and prevent fractures.</li> </ul>
<p><b>Hot flushes</b></p> <ul style="list-style-type: none"> <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> <li>• Hot flushes are an expected occurrence with ADT treatment.</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>• Decrease alcohol consumption and 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>

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## Side effects of ADT treatment (cont.)

Side effect	Things you can do	Things your doctor may do
<b>Changes to appearance</b> <ul style="list-style-type: none"> <li>Increased body fat (weight gain).</li> <li>Decreased muscle mass and strength.</li> <li>Changes to breast tissue (increased breast size and tenderness).</li> <li>Decrease in penile and testicular size.</li> <li>Changes in hair growth (thinning of hair).</li> </ul>	<ul style="list-style-type: none"> <li>Adopting a healthy lifestyle with a balanced diet and regular exercise can help to keep within a healthy body weight range.</li> <li>Decrease alcohol consumption.</li> </ul>	
<b>Risk of diabetes and heart disease</b> <ul style="list-style-type: none"> <li>You may be at an increased risk of diabetes and heart disease due to increased body weight, decrease in muscle mass, changes to cholesterol levels and increase in blood pressure.</li> </ul>	<ul style="list-style-type: none"> <li>Do regular exercise and maintain a balanced diet to keep within a healthy body weight range.</li> <li>Stop smoking.</li> <li>Decrease alcohol consumption.</li> </ul>	<ul style="list-style-type: none"> <li>Blood pressure, cholesterol and blood glucose should be monitored regularly throughout ADT, and treatment may be required.</li> <li>Patients at high risk of heart disease may be treated with aspirin therapy.</li> </ul>
<b>Emotional and cognitive changes</b> <ul style="list-style-type: none"> <li>Decrease in cognitive performance (reduced ability to concentrate, memory problems).</li> <li>Depression (reduced mood).</li> <li>Fatigue.</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining a healthy lifestyle with a balanced diet and regular exercise can help with tiredness and mood.</li> <li>If you are feeling down, talk to a support person or your doctor.</li> </ul>	<ul style="list-style-type: none"> <li>Treatment with medications may be required for mood or anxiety.</li> </ul>

## ! For more information, visit:

- Andrology Australia**  
[https://www.healthymale.org.au/files/resources/androgen\\_deprivation\\_therapy\\_fact\\_sheet\\_healthy\\_male\\_2019.pdf](https://www.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.html](http://cancer.org/cancer/prostate-cancer/treating/hormone-therapy.html)

**Cancer Institute NSW** | [cancer.nsw.gov.au](http://cancer.nsw.gov.au)

t +61 (0)2 8374 5600 f +61 (0)2 8374 3600 e [cinsw-information@health.nsw.gov.au](mailto:cinsw-information@health.nsw.gov.au)