Androgen Deprivation Therapy

Androgen deprivation therapy (ADT), formerly called hormone therapy, is a treatment that works well for many men with prostate cancer. Doctors will talk about the use of ADT with men who have certain kinds of prostate cancer, or when prostate cancer progresses. When talking with your doctor or medical team, you need to think about the benefits of ADT and the risks of the side-effects to decide if and when to include ADT in your treatment.

What are androgens?

Androgens are male sex hormones that increase at puberty and are needed for a boy to develop into a sexually mature adult who can reproduce. The most important androgen is testosterone.

What is testosterone?

Testosterone is the most important androgen in men and it is needed for normal reproductive and sexual function. Testosterone is important for the physical changes that happen during male puberty, such as development of the penis and testes, and for the features typical of adult men such as facial and body hair and a masculine physique. Testosterone also acts on cells in the testes to make sperm.

Testosterone is also important for overall good health. It helps the growth and maintenance of bones and muscles, and affects mood, libido (sex drive) and certain aspects of mental ability.

What is androgen deprivation therapy (hormone therapy)?

The growth of both normal cells

in the prostate gland and prostate cancer cells rely on male hormones (androgens), particularly testosterone. Androgen deprivation therapy (ADT) acts by either stopping testosterone production or by blocking the action of testosterone on the cells and tissues.

How does ADT help prostate cancer?

ADT does not cure prostate cancer but it may help to keep the growth and progression of the disease 'in check' for a period of time.

Most prostate cancers will shrink or stop growing with ADT. However, inevitably, after a period of time, (which is different for each man), the prostate cancer will start to grow again and the doctor will offer other treatments, including other forms of ADT.

What types of ADT are available?

The most common form of ADT used today is a group of medicines called gonadotrophin-releasing hormone (GnRH) agonists or antagonists. These medicines stop the pituitary gland from making hormones that act on the testes to make testosterone. These drugs are given by injection into muscle, into the fat under the skin or as implants under the skin, and depending on the particular drug are given at variable intervals (between 1 and 6 monthly).

The testes can also be removed by surgery (orchidectomy) to stop the testosterone made by the testes. Orchidectomy was used more often in the past than now, but is still a very effective therapy for men who do not wish to have regular injections of ADT.

Sometimes tablets called anti-androgens are added to GnRH blockers or orchidectomy to further block the action of testosterone on prostate cancer cells.

When is ADT used to treat prostate cancer?

ADT is the standard treatment for prostate cancers that are aggressive and have spread to other parts of the body (metastasis). ADT removes the male hormones, which feed the tumour's growth.

ADT might also be used:

- with radiotherapy for intermediate and high risk prostate cancer to increase the effectiveness of the radiotherapy
- if prostate cancer returns after surgery or radiotherapy, as shown by an increase in PSA levels (biochemical recurrence)

What are the side-effects of ADT?

Most men having ADT will have a reduced libido (a lack of interest in sexual activity) and some trouble with getting or keeping erections.

Other common side-effects include hot flushes, tiredness and sweating, gradual decrease in body hair, thinning of the bones (osteoporosis), reduced muscle strength, increased risk of cardiovascular (heart) disease, increased blood sugars and risk of development of diabetes (metabolic

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syndrome) and cognitive changes such as memory problems and difficulty doing more than one thing at a time, or emotional changes. Liver function may be affected if taking tablet forms of ADT and some men gain weight and have some breast development and/or sore nipples.

How are side-effects of ADT managed?

It is important to talk to your doctor about any side-effects that may happen. Keeping a healthy lifestyle with a good diet and regular exercise can help with tiredness and mood and cognitive changes. If men find hot flushes distressing the doctor can prescribe medicines that may help. Sexual problems can be managed by specific treatments that your doctor can discuss with you. Your doctor should also keep an eye on your blood pressure, blood sugar levels, and cholesterol levels.

Weight-bearing exercises such as walking, jogging, climbing stairs or training with weights can help to improve muscle and bone strength for men on ADT.

The effect of ADT on bone health can begin within months after starting treatment

What bone problems are linked to ADT?

Men being treated with ADT have a higher chance of lower bone mineral density (thinning of the bones) and they may develop osteoporosis. Reduced bone density and osteoporosis are linked to a higher chance of bone fractures, especially in the hip and spine.

The effect of ADT on bone health can begin within months after starting treatment and usually gets worse if a man has long-term ADT (over several years).

How are bone problems found?

Men need to be checked by their doctors for their risk of osteoporosis or fractures before starting ADT. Bone mineral density should be measured (with a 'DEXA' scan) around the time of starting ADT and regularly during treatment (yearly for men at high risk).

How are bone problems managed?

There are things that men can do, and treatments they can be given, to lower a man's chances of developing osteoporosis and fractures, such as:

- lifestyle behaviours including regular weight-bearing physical activity, no smoking and reduced alcohol intake
- increased calcium in the diet or calcium supplements (tablets)
- vitamin D supplements, if needed, to keep vitamin D levels in the normal range
- treatment with bone-specific medicines for men with low bone mineral density, a history of fractures, or men thought to be at high risk of a fracture in the future.

Men can talk to their doctor about the best way to look after their bone health while being treated with ADT.

How does ADT affect body weight and the risk of diabetes or heart disease?

Men on ADT may find that their muscles become smaller and they have an increase in body fat, especially around the abdominal (stomach) area. Higher body weight or abdominal fat increases the chance of developing diabetes or heart disease.

Studies of ADT and diabetes have shown that men using ADT for more than a year are at higher risk of developing diabetes, but the increased risk has not been seen in men on ADT for a shorter time.

As men get older, their risk of developing heart disease or having a stroke (cardiovascular risk) increases. Therefore, men starting on ADT may already be at higher risk of cardiovascular disease due to their age.

How are problems with body weight, diabetes or heart disease managed?

There are things that men can do, and treatments they can be given, to lower the risk of weight gain, diabetes and cardiovascular disease, such as:

- regular exercise and a healthy diet to prevent weight gain
- no smoking
- blood pressure treatment for raised blood pressure
- medicine for raised cholesterol
- diabetes medicine to control high blood glucose levels
- aspirin therapy for men found to be at high risk of cardiovascular disease by a doctor.

For more information visit www.andrologyaustralia.org, call 1300 303 878, or speak to your doctor.

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