



MINIMIZE AND TREAT ANDROGEN DEPRIVATION THERAPY (ADT) SIDE EFFECTS

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Note: This handout is offered as a communication aid for patients and their providers. It is not a substitute for professional examination, diagnosis, or treatment.

Prostate tissue grows due to chemicals called androgens (like testosterone) in the blood. Androgen Deprivation Therapy (ADT) lowers androgen levels and slows prostate cancer growth.

ADT is often a part of prostate cancer treatment, but it may cause side effects. The good news is there are many ways to lessen these side effects.

SEXUAL DYSFUNCTION

ADT often leads to a lower desire for sex. ADT may also make challenging to obtain or keep an erection. This is known as erectile dysfunction (ED).

Breaks in ADT, known as *intermittent ADT*, can help to alleviate some sexual dysfunction side effects. [Several clinical studies](#) show little difference between continuous and intermittent ADT for overall survival of prostate cancer. Consider discussing intermittent ADT with your oncologist as a possible option.

Treat ED and optimize penile tissue health with the following strategies:

- **Simple lifestyle changes**

Exercising and eating healthy food can help increase desire and improve sexual function.

A Harvard study noted a significant [decrease in erectile dysfunction](#) for men who walked for at least 30 minutes each day. A reduction in waistline size has a documented positive impact on ED. Good sleep habits, a healthy diet, and exercise can help combat fatigue and low libido.

- **Medicines by mouth (phosphodiesterase type 5 inhibitors)**

Sildenafil (Viagra®) or tadalafil (Cialis®) are ED medications that may help erectile function in nearly half of men on ADT.

- **Intraurethral medicine (prostaglandin E1)**

This medication is placed in the urethra before sexual activity.

- **Penile injections (shots)**

These are injected into the side of the penis before sexual activity. This is often the most [effective medical treatment for ED](#). These injections often work when the erectile nerves are affected and are usually safe for males who take blood thinners.

- **Vacuum erection device (VED)**

A VED utilizes vacuum to pull blood into the penis. A ring around the base of the penis then keeps blood in the penis before sexual activity. [Over 90% of VED users](#) report satisfaction with the VED and would use a VED again. [Daily exercise of penile tissue](#) with a VED is beneficial for men not experiencing daily erections.

A VED should [not be used](#) by men on blood-thinning medication or with a bleeding disorder. Discuss with a urologist if a VED is an appropriate choice.

- **Surgery**

Implants (often an inflatable penile prosthesis) can be put into the penis. This provides erections on demand.

- **Sensate Focus**

The progressive intimacy exercises of [Sensate Focus](#) can decrease the anxiety associated with attaining and maintaining an erection.

- **Pelvic Floor Physical Therapy**

[Pelvic Floor Physical Therapy](#) can significantly impact the ability to attain and maintain an erection.

- **Discuss Options with a Urologist**

A urologist is an expert in options for treatment of ED. Check into insurance coverage and out-of-pocket expenses for the various options discussed. A one-time \$350 out-of-pocket expense for a VED may cost less over time than medication, for example.

OSTEOPOROSIS

Bones weaken in half of people on ADT. Bone fractures happen in 1 out of 6 people on ADT. Bone health can be checked with bone scans. To have the best bone health:

- **Non-medical treatment**

Make lifestyle changes, such as weight-bearing exercise, moderate non-burning sun exposure, limiting alcohol use, and stopping smoking.

- **Calcium**

1200 mg of calcium daily from food or supplements can help combat osteoporosis. Foods rich in calcium

include beans, dark leafy greens (spinach, kale, broccoli), and foods with added calcium (fortified non-dairy unsweetened milk options- almond, coconut, cashew, or soy milk)

- **Vitamin D**

Getting 900 to 1000 IU each day of vitamin D is beneficial. You can get this with moderate sun exposure. You can also eat foods high in vitamin D (salmon) and foods with added vitamin D (fortified non-dairy unsweetened milk options- almond, coconut, cashew, and soy milk).

HEART HEALTH, DIABETES, AND BODY COMPOSITION

ADT may lead to heart problems, diabetes, and issues caused by diabetes. Enlarged and painful breast tissue, called gynecomastia, may occur. Many men will gain weight after starting ADT due to gaining more fat and losing muscle.

Optimize heart health, blood sugar control, and body composition with these practical strategies:

- **Nutrition and exercise**

A combination of **low carbohydrate** meals, for a total of less than 20g daily, and exercise can help with weight loss. **Walking or other exercise for** at least 30 minutes 5 or more days each week helps with weight loss, decreased anxiety, and improved sense of well-being. Doing this can lead to **weight loss** and better control of diabetes, cholesterol, and triglycerides. Nutrition plans high in **vegetables, fruits, nuts, and seafood and low in red meat and sugar** can also lower weight in men on ADT.

- **Meet with a nutritionist or dietitian**

Many cancer centers have a nutritionist or dietitian available to patients. Consider taking advantage of access to a nutritionist to gain their expertise for your specific dietary needs.

MOOD CHANGES

ADT can change how you think. It can lead to depression, mood swings, and a higher risk of dementia.

Optimize mental and brain health with:

- **Healthy nutrition plans**

Eating better helps a person to feel better.

- **Exercise**

Physical activity has documented benefits for mental health.

- **Anti-depressant medicines**

Taking these with exercise may help with depression. Also, see the use of anti-depressants in the hot flashes section.

- **Intermittent ADT**

Planned breaks in ADT may help with mood. Discuss with your oncologist if intermittent ADT is appropriate for you.

- **Behavioral oncology referral**

HOT FLASHES

Up to 80 out of 100 people on ADT will have hot flashes. This is an experience of heat, flushing, and sweating. People often feel this on the face, chest, and back. It often lasts for minutes, may happen one after the other, and may happen often or rarely. Lessen hot flashes with:

- **Behavioral changes.**

There are several strategies which can be used to combat hot flashes:

Use a fan and wear loose-fitting clothes. Sip cold drinks, lower room temperatures, and avoid spicy foods.

- **Acupuncture**

The complementary treatment of [acupuncture](#) significantly reduces the severity of hot flashes.

The following medications may help. *Actual dosing is dependent on what is tolerated by each individual and provider judgment.* The following suggested doses are for an informed discussion with an oncology provider.

- **Hormone therapy** to lessen hot flashes. Many people take [megestrol acetate](#) (Megace®) 20 to 40 mg by mouth daily. Megace® is a progesterone analog and may cause weight gain, fatigue, and blood clots.
- **Antidepressants**
Selective serotonin reuptake inhibitors (SSRIs) and selective norepinephrine reuptake inhibitors (SNRIs) can lessen hot flashes by 60%. These medications may cause:
 - Dry mouth
 - Insomnia (not being able to sleep)
 - Nausea
 - Erectile and orgasmic dysfunction
 - Less penile sensation

Anti-Depressants

Some [anti-depressants](#) have shown 50-60% effectiveness in the treatment of hot flash symptoms:

- Venlafaxine® 75 mg ER by mouth daily
- Desvenlafaxine® 100 mg by mouth daily
- Paroxetine® 10 mg controlled release by mouth daily
- Citalopram® 10 to 20 mg by mouth daily
- Fluoxetine® 20 mg by mouth daily

Nerve pain medicines

[Gabapentin and pregabalin](#) (Lyrica®) have also shown 50 to 60% effectiveness in combatting hot flashes with

ADT: Gabapentin 300 mg by mouth 3 times daily, or pregabalin 75 mg by mouth 2 times daily. These medications may cause:

- Fatigue
- Cognitive difficulty
- Weight gain

Anticholinergic medicines

[Oxybutin](#), an anticholinergic medication, is 70% effective in treating ADT-related hot flashes. It is also used to treat [urinary frequency and urgency](#). This class of medications may cause:

- Dry mouth
- Constipation
- Trouble sleeping
- Cognitive impairment/dementia

Keep your oncologist in the loop.

Some people continue to experience hot flashes, even after stopping ADT. Discuss your symptoms with your oncologist and options to treat these symptoms.

FATIGUE

Fatigue happens in up to half of men on ADT. [Fatigue can be lessened](#) with:

- **Proper nutrition and exercise**

See recommendations in the **heart health, diabetes, and body composition section**. They are the most effective options.

Many people being treated for cancer have success with **yoga** to combat fatigue.

- **High-quality sleep**

Keep the same bed and awake times. Keep your room quiet and dark. Do not have technology in your bedroom. Limit naps, alcohol, nicotine, large meals near bedtime, and caffeine after lunch. Sleep apnea may also worsen fatigue. Talk with your provider about sleep apnea testing or treatment if you:

- Feel tired during the day
- Snore
- Are told you stop breathing or choke/gasp during sleep
- Have high blood pressure
- Have neck circumference over 40 cm (16 inches)
- Have a BMI over 35 kg/m²
- Have early morning headaches

OTHER TREATMENTS

Orchiectomy is the removal of the testicles. This is an option instead of ADT. There is no change in survival between the two. There is a lower risk of breaking bones and heart disease complications with orchiectomy. It does have a higher risk of sexual side effects compared to ADT. Talk with your provider to learn more.

OVERALL

ADT is often a part of many prostate cancer treatment plans. It may cause bothersome side effects. Eating healthy foods and exercising are ways to lessen most side effects. Think about changes you can make now.

You may also have medical and/or surgical options. Talk with your provider if you have symptoms or are worried about them.

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pg. 6

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