



PATIENT & CAREGIVER EDUCATION

Hormonal Therapy for People with Prostate Cancer

This information explains hormonal therapy for people with prostate cancer who are having radiation therapy.

About Hormonal Therapy for Prostate Cancer

Testosterone is a male hormone. It's made when hormones from your pituitary gland (a gland in your brain) cause your testes (testicles) to make sperm. Testosterone can cause prostate cancer cells to grow.

Hormonal therapy prevents prostate cancer cells from growing by:

- Decreasing the amount of testosterone your testicles make.
- Blocking the action of testosterone and other male hormones.

Your doctor may recommend hormonal therapy in order to:

- Decrease the size of your prostate before you start radiation therapy. This will help reduce the amount of normal tissue that gets radiation.
- Make it easier for radiation to kill prostate cancer cells.
- Relieve pain.
- Slow the spread of the disease in advanced prostate cancer.

Types of Hormonal Therapies

There are 3 types of hormonal therapies for the treatment of prostate cancer. They may be used alone or together.

- **Luteinizing hormone-releasing hormone (LHRH) agonists** block the signal from your pituitary gland that tells your testicles to make testosterone. Leuprolide (Lupron®) and goserelin (Zoladex®) are LHRH agonists. They're given by injection either once a month or every 3, 4, or 6 months.
- **Anti-androgens** are medications that block testosterone from attaching to cancer cells. This keeps it from helping cancer cells grow. One example of an anti-androgen is bicalutamide (Casodex®). This is a pill you take once a day.
 - If you're taking bicalutamide, make sure you take it at the same time every day, with or without food.
 - Your healthcare team will tell you when to start taking this medication.
- **Gonadotropin releasing hormone (GnRH) antagonists** are medications that stop testosterone from being made. One example of a GnRH antagonist is degarelix (Firmagon®). It's given as an injection under your skin once every 28 days.

If you're getting hormonal therapy by injection, read the section at the end of this resource called "Your Injection Schedule."

While You're Taking Hormonal Therapy

- Tell your doctor or nurse if you're taking any medications, including patches and creams, or if you've changed medications. Some medications may change the way hormonal therapy works. Tell your doctor if you're taking:
 - Medications that require a prescription
 - Medications that don't require a prescription
 - Any herbal remedies, vitamins, or dietary supplements
- You'll have blood tests. This is because your liver enzymes may go up. If this happens, your doctor will discuss it with you and make a plan, if needed.
- Alcohol may interfere with your medications. Please check with your healthcare providers if you want to drink alcohol.

Side Effects of Hormonal Therapies

Hormonal therapy may cause side effects. These may go away gradually during treatment. Sometimes they last many months after the therapy is stopped.

You may have some or none of the following:

- Hot flashes or sweating
- Fatigue (feeling very tired or having less energy than usual)
- Erectile dysfunction (having trouble or not being able to get or keep an erection)
- Decreased sexual desire
- Diarrhea (watery or loose bowel movements)
- Constipation (having fewer bowel movements than usual)
- Generalized pain
- Breast tenderness or growth of breast tissue
- Weight gain
- Muscle weakness
- Depression
- Decrease in mental sharpness
- Local reaction at the injection site

Preventing Disease While You're On Hormonal Therapy

Diabetes and heart disease

Hormonal therapy may increase your risk for diabetes and heart disease. Maintain a healthy lifestyle to help reduce this risk.

- Don't smoke or use tobacco products. If you currently smoke, the Tobacco Treatment Program can help you quit. Your healthcare team will refer you to

this program for support, or you can call 212-610-0507 for more information.

- Maintain or achieve a healthy body weight. If you'd like to meet with a clinical dietitian nutritionist, call 212-639-7071.
- Follow a healthy diet. Your diet should be high in fiber, low in fat, and low in concentrated sweets. For more information, read the resource *Nutrition and Prostate Cancer: Making Healthy Diet Decisions* (http://cdn.mskcc.org/pe/nutrition_prostate_cancer). You can find it online or ask your healthcare provider for a copy.
- Exercise regularly. Examples include brisk walking, jogging, biking, aerobics, and yard work. We recommend you exercise 30 minutes every day in addition to your daily routine. Even if you can't exercise every day, whatever you can do will be helpful.

Osteoporosis

Taking hormonal therapy for a long time may increase your risk for osteoporosis. Osteoporosis is disease in which your bones become weak and more likely to fracture (break). Getting enough calcium and vitamin D and exercising can help reduce this risk. For more information, read our resource *Improving Your Bone Health* (http://cdn.mskcc.org/pe/improving_bone_health). You can find it online or ask your healthcare provider for a copy.

Calcium

Make sure you're getting enough calcium. Most adults need 1,000 to 1,200 milligrams (mg) of calcium every day, but your doctor or dietitian can tell you how much calcium is right for you.

The best way to get calcium is through food. Examples of calcium-rich foods include milk, cheese, yogurt, canned salmon, tofu, cottage cheese, fortified orange juice, spinach, and almonds.

If you don't get enough calcium from your diet, your doctor or dietitian may suggest that you take a calcium supplement. You don't need a prescription for this. Your doctor or dietitian will tell you how much to take.

There are several types of over-the-counter calcium supplements, including calcium carbonate and calcium citrate. These supplements are taken orally (swallowed).

- Calcium carbonate is absorbed best if you take it with meals. OsCal® and Caltrate® are 2 brands of calcium carbonate supplements.
- Calcium citrate is another type of calcium supplement. Some people may absorb calcium citrate better than calcium carbonate. This is true for older people, or those with low stomach acid (such as people who have pernicious anemia). Calcium citrate absorbs best if you take it 30 minutes before a meal. One brand of calcium citrate is Citracal®, which is available in most pharmacies.

If you're taking more than 500 mg of calcium supplements per day, take it in divided doses for best absorption. For example, if you take 1,000 mg of calcium each day, take 500 mg in the morning and 500 mg in the evening.

Vitamin D

Vitamin D also plays an important role in preventing osteoporosis. You need vitamin D to absorb and use calcium.

Vitamin D is measured in the number of international units (IU) that you need per day. If you're between the ages of 19 and 70, you need 600 IU of vitamin D per day. If you're over 70 years of age, you need 800 IU of vitamin D per day.

You can get vitamin D from sunlight, food, and vitamin D supplements. If you wear sunscreen or are indoors most of the time, you may need to get vitamin D from other sources.

Food sources of vitamin D include fatty fish (such as salmon, mackerel, and tuna), egg yolks, liver, and some fortified products like milk and orange juice.

It's hard to get all the vitamin D you need from food, so a supplement is often recommended. Before adding a separate vitamin D supplement, check to see if your multivitamin or calcium supplement contains vitamin D.

Exercise

Your doctor may recommend exercises to strengthen your bones and muscles. These may be weight-bearing exercises that help increase bone density, such as walking, jogging, or running. They may also be non-weight-bearing exercises such as swimming.

Always talk with your doctor before starting a new exercise routine. If you have trouble establishing an exercise routine, talk with your doctor about whether physical therapy is right for you.

Anemia

Taking hormonal therapy for a long time may increase your risk for anemia. Anemia is when you have fewer red blood cells than normal. Your red blood cells carry oxygen from your lungs to the other tissues in your body.

When you have anemia, you may feel unusually tired. Your doctor will discuss this with you and may prescribe medication to help prevent anemia.

When to Call Your Doctor or Nurse

Call your doctor or nurse if you have:

- Any of the side effects listed
- Any new side effects
- Questions or concerns

Your Injection Schedule

The medication you'll be getting is _____

You'll get them for _____ days/weeks/months

You'll get them on: _____

Your first injection is scheduled for _____

You may get these injections in the radiation oncology clinic or at your urologist's office.

If you have any questions, contact a member of your healthcare team directly.
If you're a patient at MSK and you need to reach a provider after 5:00 PM,
during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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