Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Hormonal Therapy During Radiation Therapy to Your Prostate

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. If you have prostate cancer, testosterone can make the cancer cells grow.

Hormonal therapy keeps prostate cancer cells from growing by:

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

Your healthcare provider may recommend hormonal therapy to:

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

Types of hormonal therapies

There are 3 types of hormonal therapies for 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 (shot) either once a month or every 3, 4, or 6 months.
- **Anti-androgens** are medicines 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 medicine.
- **Gonadotropin releasing hormone (GnRH) antagonists** are medicines 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 (4 weeks).

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

While you're taking hormonal therapy

- Tell your healthcare provider if you're taking any medicines, including patches and creams, or if you've changed medicines. Some medicines may change the way hormonal therapy works. Tell your healthcare provider if you're taking:
    - Prescription medicines (medicines a healthcare provider prescribes for you).
    - Over-the-counter medicines (medicines you get without a prescription).
    - Dietary supplements, such as vitamins, minerals, and herbal or home remedies.
- You'll have blood tests. This is because your liver enzymes may go up. If this happens, your healthcare provider will talk with you. They will make a plan to manage it if needed.

- Alcohol may keep your medicines from working like they should. Talk with your healthcare provider if you want to drink alcohol.

Side effects of hormonal therapies

Hormonal therapy may cause side effects. The side effects may go away over time during your treatment. Sometimes they last many months after hormone therapy ends. You may have some or none of these side effects.

- Hot flashes or sweating.
- Fatigue (feeling very tired or having less energy than usual).
- Erectile dysfunction (having trouble getting or keeping an erection).
- Less sexual desire than usual.
- Diarrhea (watery or loose bowel movements).
- Constipation (having fewer bowel movements than usual).
- Generalized pain.
- Breast tenderness or breast tissue growth.
- Weight gain.
- Muscle weakness.
- Depression.
- Less mental sharpness.
- Local reaction at the injection site.

Our Male Sexual and Reproductive Medicine Program can help with sexual health problems, such as erectile dysfunction (ED). Call 646-888-6024 to learn more or make an appointment.

Preventing disease during hormonal therapy

Diabetes and heart disease

Hormonal therapy may raise your risk for diabetes and heart disease. Follow a healthy lifestyle to help lower this risk.

- Do not smoke or use tobacco products. If you smoke, MSK's Tobacco Treatment Program has specialists who can help you quit. Your healthcare team will refer you to this program for support. To learn more about our Tobacco Treatment Program, visit www.msk.org/tobacco or call 212-610-0507.
- Get to or stay at a healthy body weight. If you'd like to meet with a clinical dietitian nutritionist, call 212-639-7071. You can also visit www.msk.org/nutrition to learn more.
- Follow a healthy diet. Your diet should be high in fiber, low in fat, and low in concentrated sweets. Read *Nutrition and Prostate Cancer: Making Healthy Diet Decisions* (www.mskcc.org/pe/nutrition-prostate-cancer) to learn more.
- Exercise regularly. Examples include brisk walking, jogging, biking, aerobics, and yard work. We recommend you exercise for 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 raise your risk for osteoporosis (OS-tee-oh-puh-ROH-sis). Osteoporosis is when your bones become weak and more likely to break.

Getting enough calcium, vitamin D, and exercise can help lower your risk for osteoporosis. Read *Osteoporosis, Osteopenia, and How to Improve Your Bone Health* (www.mskcc.org/pe/osteo-bone-health) to learn more.

Calcium

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

The best way to get calcium is through food. These foods and drinks have lots of calcium:

- Milk
- Cheese
- Yogurt
- Canned salmon
- Tofu
- Cottage cheese
- Calcium-fortified orange juice
- Spinach
- Almonds

Calcium supplements

Some people can't get enough calcium from their diet. If that's true for you, your healthcare provider or clinical dietitian nutritionist may suggest taking a calcium supplement. You can buy an over-the-counter calcium supplement at your local pharmacy without a prescription.

Calcium carbonate and calcium citrate are types of over-the-counter calcium supplements. They come as pills that you swallow. Some people may absorb calcium citrate better than calcium carbonate. This is true for older people and people with low stomach acid, such as people who have pernicious anemia.

- If you take calcium carbonate, it's best to take it with a meal. That helps your body absorb it. OsCal® and Caltrate® are examples of calcium carbonate supplements.
- If you take calcium citrate, it's best to take it 30 minutes before a meal. This helps your body absorb it. Citracal® is an example of a calcium cirrate supplement you can get in most pharmacies.

Your healthcare provider or clinical dietitian nutritionist will tell you how many milligrams of calcium to take each day. If you're taking more than 500 mg of

calcium supplements per day, take it in divided doses. This helps your body absorb it. 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

Your body needs vitamin D to absorb and use calcium. Vitamin D is measured in the number of international units (IU) you need per day.

- If you're between age 19 and 70, you need 600 IU of vitamin D per day.
- If you're over age 70, you need 800 IU of vitamin D per day.

You can get vitamin D from sunlight and food. These foods and drinks have vitamin D:

- Fatty fish, such as salmon, mackerel, and tuna
- Egg yolks
- Liver
- Vitamin D-fortified milk
- Vitamin D-fortified orange juice

Vitamin D supplements

Healthcare providers often recommend taking a vitamin D supplement. It's hard to get all the vitamin D you need from food. And if you wear sunscreen or are indoors most of the time, you will not get very much vitamin D from the sun.

Many multivitamins and some calcium supplements have vitamin D. Check to see if yours does before you start taking a separate vitamin D supplement.

Exercise

Your healthcare provider may recommend exercises to strengthen your bones and muscles. These may be weight-bearing exercises that help make your bones more dense, such as walking, jogging, or running. They may also be non-weight-bearing exercises, such as swimming.

Always talk with your healthcare provider before starting a new exercise

routine. If you have trouble setting up an exercise routine, ask if physical therapy is right for you.

Anemia

Taking hormonal therapy for a long time may raise 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 healthcare provider will talk with you about anemia. They may also prescribe medicine to help prevent it.

When to call your healthcare provider

Call your healthcare provider if you have:

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

Your injection schedule

The medicine(s) you will get are: _____

You will get them for _____ days/weeks/months

You will get them on: _____

Your first injection is scheduled for: _____

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

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

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

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