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# Hormone Therapy

## How hormone therapy is used to treat cancer

Hormones are proteins or substances made by the body that help to control how certain types of cells work. For example, some parts of the body rely on sex hormones, such as estrogen, testosterone, and progesterone, to function properly. There are other types of hormones in our bodies, too, such as thyroid hormones, cortisol, adrenaline, and insulin. Different types of hormones are made by different organs or glands.

Some cancers depend on hormones to grow. Because of this, treatments that block or alter hormones can sometimes help slow or stop the growth of these cancers. Treating cancer with hormones is called *hormone therapy*, *hormonal therapy*, or *endocrine therapy*. Hormone therapy is mostly used to treat certain kinds of breast cancer and prostate cancer that depend on sex hormones to grow. A few other cancers can be treated with hormone therapy, too.

Hormone therapy is considered a *systemic* treatment because the hormones they target circulate in the body. The drugs used in hormone therapy travel throughout the body to target and find the hormones. This makes it different from treatments that affect only a certain part of body, like most types of surgery and radiation therapy. Treatments like these are called *local* treatments because they affect one part of the body. (However, surgery to remove hormone-making organs can also be used as a form of hormone therapy, as discussed below.)

**The information below describes hormone therapy used to treat cancer. If you are a transgender person with cancer, and hormone therapy is a treatment option, please talk to your cancer care team for more information about how the treatment affects your situation.**

## How hormone therapy works

Hormone therapy travels throughout the body to find and target hormones. Different types of hormone therapy work in different ways. They can:

- Stop the body from making the hormone
- Block the hormone from attaching to cancer cells
- Alter the hormone so it doesn't work like it should

Hormone therapy can be used to:

- Treat a certain kind of cancer by stopping or slowing its growth
- Lessen symptoms related to a certain type of cancer

## Video

This short video provides answers to some of the most common questions that people with cancer have about hormone therapy.

[Hormone Therapy Video](#) <sup>1</sup>

## Types of hormone therapy

There are several different types of hormone therapy. Here are some examples and the cancers they might be used to treat.

### Breast cancer

- Aromatase inhibitors (AIs), such as anastrozole, exemestane, and letrozole
- Selective estrogen receptor modulators (SERMs), such as tamoxifen and raloxifene
- Estrogen receptor antagonists, such as fulvestrant and toremifene
- Luteinizing hormone-releasing hormone (LHRH) agonists, such as goserelin, leuprolide, and triptorelin
- Surgery to remove the ovaries (known as an oophorectomy)

See [Hormone Therapy for Breast Cancer](#)<sup>2</sup> to learn more.

### Prostate cancer

- Anti-androgens, such as apalutamide, enzalutamide, darolutamide, bicalutamide, flutamide, and nilutamide (also called androgen deprivation therapy or ADT)

- CYP17 inhibitors, such as abiraterone and ketoconazole
- Luteinizing hormone-releasing hormone (LHRH) agonists and antagonists, such as goserelin, leuprolide, triptorelin, and degarelix
- Surgery to remove the testicles (known as an orchiectomy or surgical castration)

See [Hormone Therapy for Prostate Cancer](#)<sup>3</sup> to learn more.

### **Endometrial (lining of the uterus or womb) cancer**

- Progestins, such as medroxyprogesterone acetate or megestrol acetate
- Selective estrogen receptor modulators (SERMs), such as tamoxifen and raloxifene
- Luteinizing hormone-releasing hormone (LHRH) agonists, such as goserelin, and leuprolide
- Aromatase inhibitors (AIs), such as letrozole, anastrozole, and exemestane

See [Hormone Therapy for Endometrial Cancer](#)<sup>4</sup> to learn more.

### **Adrenal cancer**

- Adrenolytics, such as mitotane
- Estrogen receptor antagonists, such as fulvestrant and toremifene
- Selective estrogen receptor modulators (SERMs), such as tamoxifen and raloxifene

See [Chemotherapy for Adrenal Cancer](#)<sup>5</sup> and [Other Drugs Used to Treat Adrenal Cancer](#)<sup>6</sup> to learn more.

## **Getting hormone therapy**

### **Oral drugs**

Many types of hormone therapy are drugs that are taken by mouth. In these cases, you swallow the pill, capsule, or liquid just like other medicines. These are usually taken at home. How often they are taken depends on the drug being given and the type of cancer being treated. Because of this, it's very important to make sure you know exactly how it should be taken and to follow instructions exactly. There may be special precautions to take, depending on the drug you're prescribed. You can read more about special precautions for oral cancer drugs and what you should ask your cancer care team in the section on Oral Chemo in [Getting Oral or Topical Chemotherapy](#)<sup>7</sup>.

## **Injectable drugs**

Some types of hormone therapy are injections given in the arm, leg, or hip. These are called intramuscular (or IM) injections. There are also types that are given just under the skin of the abdomen (belly). These are called subcutaneous (SC or sub-Q) injections. How often they are given depends on the drug and type of cancer being treated. The injections might be given in your treatment center or doctor's office. Sometimes patients are taught to give their own injections or a caregiver can be taught to give them.

## **Surgery to remove hormone-making organs**

Some types of surgery can also be forms of hormone therapy. For example, an orchiectomy (surgery to remove the testicles, the body's main source of testosterone) can be an option for some men with prostate cancer who need hormone therapy as part of their treatment. Likewise, an oophorectomy (surgery to remove the ovaries, the body's main source of estrogen and progesterone) can be an option for some women with breast cancer.

Side effects from this type of hormone therapy tend to be like those from drugs that lower hormone levels in the body (see below). An advantage of this type of hormone therapy is that it is done all at once, and it doesn't require long-term treatment with medicines. A possible downside is that it is permanent, so once it's done, it can't be reversed.

## **Hormone therapy side effects**

Each patient's side effects can be different, and will depend on the type of hormone therapy they're getting and other factors. It's very important to know about possible side effects when making treatment decisions. It's also important to balance the benefits and risks of any treatment. Talk to your cancer care team, and ask any questions you have about hormone therapy.

Men who get hormone therapy for prostate cancer might have these possible side effects:

- Hot flashes
- Decreased sexual desire
- Erectile dysfunction (trouble getting an erection)
- Bone loss and a higher risk for fractures
- Fatigue

- Weight gain (especially around the belly) with decreased muscle mass
- Memory problems
- Increased risk of other health problems

Women getting hormone therapy for breast or endometrial cancer might have these possible side effects:

- Hot flashes
- Vaginal discharge, dryness, or irritation
- Decreased sexual desire
- Fatigue
- Nausea
- Pain in muscles and joints
- Bone loss and a higher risk for fractures
- Higher risk of other types of cancer, stroke, blood clots, cataracts, and heart disease

Men with breast cancer who are getting hormone therapy can also experience many of these same side effects, along with having erectile dysfunction.

Read more about these side effects in [Hormone Therapy for Breast Cancer](#)<sup>8</sup>, [Hormone Therapy for Prostate Cancer](#)<sup>9</sup>, or [Hormone Therapy for Endometrial Cancer](#)<sup>10</sup>. See [Managing Cancer-related Side Effects](#)<sup>11</sup> to learn about what to watch for and how to manage side effects.

## Hormone therapy drug safety

Much is known about the need to protect others from exposure to standard chemotherapy because it is hazardous. This is why there are safety rules and recommendations for people who handle chemo drugs. Some hormone therapy drugs also have precautions. **Talk to your cancer care team about any special precautions that might be needed to protect yourself and others while you are taking hormone therapy.**

## Hyperlinks

1. [www.youtube.com/embed/c2TrhSnCVnQ/](http://www.youtube.com/embed/c2TrhSnCVnQ/)
2. [www.cancer.org/cancer/breast-cancer/treatment/hormone-therapy-for-breast-cancer.html](http://www.cancer.org/cancer/breast-cancer/treatment/hormone-therapy-for-breast-cancer.html)

3. [www.cancer.org/cancer/prostate-cancer/treating/hormone-therapy.html](http://www.cancer.org/cancer/prostate-cancer/treating/hormone-therapy.html)
4. [www.cancer.org/cancer/endometrial-cancer/treating/hormone-therapy.html](http://www.cancer.org/cancer/endometrial-cancer/treating/hormone-therapy.html)
5. [www.cancer.org/cancer/adrenal-cancer/treating/chemotherapy.html](http://www.cancer.org/cancer/adrenal-cancer/treating/chemotherapy.html)
6. [www.cancer.org/cancer/adrenal-cancer/treating/other-drugs.html](http://www.cancer.org/cancer/adrenal-cancer/treating/other-drugs.html)
7. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy/oral-chemotherapy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy/oral-chemotherapy.html)
8. [www.cancer.org/cancer/breast-cancer/treatment/hormone-therapy-for-breast-cancer.html](http://www.cancer.org/cancer/breast-cancer/treatment/hormone-therapy-for-breast-cancer.html)
9. [www.cancer.org/cancer/prostate-cancer/treating/hormone-therapy.html](http://www.cancer.org/cancer/prostate-cancer/treating/hormone-therapy.html)
10. [www.cancer.org/cancer/endometrial-cancer/treating/hormone-therapy.html](http://www.cancer.org/cancer/endometrial-cancer/treating/hormone-therapy.html)
11. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)

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