



PINK HOPE

# *treatment induced menopause*

## **Fertility**

Menopause, and therefore infertility, can be induced in some circumstances by cancer treatments such as chemotherapy, radiation therapy and surgery. Chemotherapy and radiation therapy can cause menopause by damaging ovarian cells. This does not occur in all cases, and is dependent on the age of the patient, the dose, and the type of treatment used. Surgery that removes both ovaries, an oophorectomy, causes menopause in all cases. Other surgeries such as a hysterectomy can also involve ovary removal as well - although if only the uterus is removed, menopause will not be induced. These risks can affect a range of people, including women under the age of 40 who can develop premature menopause.

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## **How do ovaries work?**

Your ovaries consist of cells that produce hormones, and germ cells that become your eggs (ova). These cell types cohabitate in groups called follicles, and are interdependent, relying on each other for survival. This means disruption to one cell type leads to damage of the other as well. The number of germ cells in the ovaries is fixed from birth, and decreases with each menstrual cycle until menopause. This means that the more cycles you have had, the less ova you have left.

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## **Chemotherapy Induced Menopause**

The chemicals used to kill cancer cells in chemotherapy can also damage the body, including cells in the ovaries. Damage can be done to hormone-producing and germ cells in the ovarian follicles. Killing follicular cells limits the number of eggs left and therefore the number of menstruation cycles, which can cause premature menopause. This may occur directly after treatment or can just reduce future menstrual cycles. This side effect of chemotherapy doesn't occur in all patients, and is dependent on your age at time of treatment and the type of drug you receive.

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## **Pelvic Radiation Therapy Induced Menopause**

Radiation therapy in the pelvic region can also cause menopause by damaging the ovarian follicular cells. In contrast to chemotherapy, pelvic radiation almost always causes permanent damage to the reproductive system. Menopausal effects of radiation therapy can occur during treatment and can continue afterwards.



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## Surgically Induced Menopause

Menopause is induced surgically by the removal of ovaries in an oophorectomy, or as part of a hysterectomy.

By removing one or both ovaries, production of the hormones that trigger menstruation (estrogen and progesterone) slows, causing menstruation to stop. When both ovaries are removed, menopause will occur in all cases, and can be a different experience to natural menopause.

When menopause occurs naturally, the ovaries production of estrogen, progesterone and testosterone (yes we have that too!) slows, though small amounts continue to be released. After an oophorectomy, the production of these hormones stops completely, which tends to cause more sudden and severe symptoms of menopause. The good news is there are medications you can take to help ease this transition into menopause depending on your personal risk of breast cancer.

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## Hormone Replacement Therapy

Hormone replacement therapy (HRT) is used to supplement a lack of naturally occurring hormones in the body and is often used to treat menopause. After an oophorectomy or follicle cell damage, ovarian production of sex hormones, estrogen and progesterone, slows down or stops. A lack of sex hormones induces menopause and causes uncomfortable menopausal symptoms such as vaginal burning, dryness and itchiness, as well as reduced bone density and hot flashes.

HRT can be used to treat these symptoms by providing medication in the form of natural or synthetic hormones. There are two types of medication - combination HRT which contains estrogen and progesterone, and estrogen only HRT. These treatments can provide relief for troublesome menopausal symptoms, and can make the transition into a new phase of life easier. However, HRT isn't for everyone and its usability depends on your individual risk factors.

HRT has been shown to increase the risk of breast cancer. Research has found that estrogen only HRT can increase your risk when used for over 10 years, and combination HRT can increase your risk up to 75% even when only used for a short period of time. This is because the hormones given can promote hormone-receptor-positive tumors. These types of tumors rely on and are promoted by hormones for their proliferation. For example, delivering doses of estrogen in HRT greatly increases the chances of estrogen-receptor-positive breast cancer. So before starting HRT, it is important to speak to your doctor about your family history of breast cancer, and any genetic predisposition you may have.

Risks associated with HRT may be lower in women who have had a double mastectomy, as they do not have breast tissue. However, medical professionals are the best assessor of your risk.



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## Tips



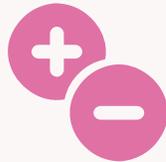
Talk to your doctor or specialist before undergoing treatment for cancer about your risk of developing menopause.



Be sure to discuss how you can manage your symptoms, and whether HRT is an option for you if you do develop menopause.



Explore all your treatment options and whether each could induce menopause.



Make sure to ask about pros and cons of different types of HRT and whether there are low dose options available.



Most importantly, discuss how to alleviate menopausal symptoms while minimising your risk of breast cancer.