Menopause

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. People who have gene mutations that put them at high risk of developing ovarian cancer (such as BRCA, PALB2, RAD51C, BIRP1 or lynch syndrome) can consider having an oophorectomy to reduce their risk of ovarian cancer. 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.

Before the age of 40, temporary or permanent menopause induced by cancer treatment is known as premature ovarian insufficiency (POI) whereas between ages 40 to 45, it is known as early menopause.

How 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.

'Natural' Menopause

A woman going through natural menopause is said to be 'postmenopausal' when she has not had a period (menstrual cycle) for 1 year. The average age of natural menopause is around 51 years. It is usual for women to notice a change in their periods from their late 40s. Some women notice a gradual onset of menopausal symptoms (called perimenopause) before their periods stop completely. Some women do not experience any changes other than their periods stopping. It is not possible to predict who will have symptoms or changes (such as hot flushes or changes in mood, energy, sleep or sexual function) and who will not.

Cancer Treatment Induced Menopause

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. Menstruation typically starts again naturally between 8 months to 2 years following the end of chemotherapy treatment.

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. This is because radiation therapy is more targeted than chemotherapy, with a high-energy beam directly localising the effect of radiation to the ovaries. Also, radiation therapy damages the DNA of all cells in the target area, whereas chemotherapy interrupts the division of only rapidly dividing cells, so cells that aren't dividing, or aren't dividing as fast, may survive.

Menopausal effects of radiation therapy can occur during treatment and can continue afterwards.

Surgically Induced Menopause

Menopause is induced surgically by the removal of ovaries in an oophorectomy, or as part of a hysterectomy. Surgical removal of both ovaries and usually the fallopian tubes which join to the uterus (womb) is called risk reducing salpingo-oophorectomy (RR-SO). By removing one or both ovaries, production of the hormones that trigger menstruation (estrogen and progesterone) slows, causing menstruation to stop. This type of surgery minimises ovarian cancer risk (and can reduce breast risk in some women as well). On the other hand, it can produce menopausal symptoms in some women. It is not possible to know who will be troubled by these symptoms and who will not.

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 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.

There have been remarkably few studies which have followed women before and after surgery to try to understand how surgery affects their menopausal symptoms and short and long term health.

Common Side Effects of Early Menopause

Natural menopause takes many years to take full effect from the start of the normal menstrual cycle being disrupted to the period stopHRTping entirely. Any type of cancer treatment induced menopause will cause hormone levels to drop in a much shorter time frame. The younger your age, the more severe the symptoms of menopause may feel because the sex hormones in your body, which stop being produced when menopause is induced, are at higher levels naturally. Below are some common symptoms of menopause.

Sudden onset of menopausal symptoms: in particular;

- Hot flushes
- Night sweats
- Vaginal dryness

Some women may experience:

- Impaired sexual function due to discomfort from vaginal dryness
- Reduced desire or libido
- Mood changes, particularly depressed mood
- Sleep disturbance
- Possible changes in memory, thinking and/or problem-solving

There is still little information about the long-term effects of early menopause (before the age of 45) and whether this differs if menopause is due to chemotherapy or surgery.

Early menopause typically leads to an increased risk of heart diseases, neurological diseases (such as stroke), and bone loss. This risk increases the earlier the age that menopause begins. Because there may be increased risks of fracture and possibly heart disease, it is important to minimise these risks with healthy lifestyle choices or by taking Hormone Replacement Therapy (HRT). More information can be found here: www.menopause.org.au

It is also very important to take care of your emotional well-being during this time. Speak to your doctor if you feel you need support. They can also refer you to a psychologist if needed.

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, 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 flushes.

HRT can be used to treat these symptoms by providing medication in the form of natural or synthetic hormones. Importantly, HRT can help reduce the effects of menopause for heart disease risk, cognitive function and bone density.

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 slightly increase the risk of breast cancer. It is important to speak to your doctor or menopause specialist about your personal risk, especially if you have undertaken a risk-reducing mastectomy.

Tips about menopause

- Talk to your doctor or specialist before undergoing treatment for cancer or undergoing risk reducing surgery, about your risk of experiencing 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 or alternative options available.
- Most importantly, discuss how to alleviate menopausal symptoms while minimising your risk of breast cancer.

Many women at high risk of breast and/or ovarian cancer experience early menopause (due to cancer prevention surgery or in some cases some cancer medications). Not everyone is troubled by menopausal symptoms, but if they happen, it is important to know that there are ways to help manage them.