Fertility and Women With Cancer

Cancer and its treatment can sometimes affect a woman's ability to have children. Here we offer information on how cancer treatment can affect fertility, ways to preserve fertility before treatment, and fertility options available after treatment.

- How Cancer Treatments Can Affect Fertility in Women
- Preserving Fertility in Women With Cancer

How Cancer Treatments Can Affect Fertility in Women

A lot of things must take place for a couple to make a baby, and a “body system malfunction” at any point can lead to changes in fertility. Cancer, or more often cancer treatments, can interfere with some part of the process and affect your ability to have children. Different types of treatments can have different effects.

What is infertility?

Infertility is not being able to become pregnant. Doctors diagnose women with infertility after they have been trying to conceive for a year without success. Women are infertile if:

- Their ovaries don’t contain healthy eggs. (Remember a woman is born with all the eggs she will ever have and they’re stored in her ovaries.)
- Damage to other parts of the reproductive system prevents eggs from being fertilized.
- A fertilized egg cannot implant and grow inside the uterus.

If you can, talk with your doctor, nurse, or another member of your health care team...
about fertility before treatment. There might be ways to save or protect your fertility before and maybe even during treatment. But after treatment, options are often more limited. (Parents of children with cancer should consider this, too. These special concerns are addressed in \textit{Preserving Fertility in Girls and Teens with Cancer}.)

Some of the things that must be considered when trying to preserve fertility in women are:

- If the cancer has spread or whether a woman has a high risk of getting cancer in these organs in the future
- If it is risky to delay starting cancer treatment (some options to preserve fertility might take too much time when the cancer is fast-growing)
- Chances of success (most fertility procedures are less successful for women over age 40).

Studies have suggested that women with cancer are less likely to be given information about preserving their fertility than men. Women who already have at least one child or those who are not married also are less likely to receive information. If you’re interested in having children in the future, you may need to start this conversation with your cancer team or doctor.

Most cancer survivors can still choose to become a parent if they wish. It might not happen the way you planned before cancer, but if you can be flexible, you’ll find that you have options. These include possible freezing of eggs, embryos, or pieces of your ovary, having infertility treatment after cancer, adopting, or using a donated egg or embryo to have a child (sometimes with the help of another woman to carry the pregnancy).

**How chemotherapy can affect fertility in women**

Most chemotherapy (chemo) drugs can damage a woman’s eggs, affecting her fertility. This depends on the woman’s age, the types of drugs she gets, and the drug doses, making it hard to predict if a woman is likely to be fertile after chemo.

The chemo drugs \textbf{most likely} to cause egg damage and infertility are:

- Busulfan
- Carboplatin
- Carmustine (BCNU)
- Chlorambucil
- Cisplatin
• Cyclophosphamide (Cytoxan®)
• Dacarbazine
• Doxorubicin (Adriamycin®)
• Ifosfamide
• Lomustine (CCNU)
• Mechlorethamine
• Melphalan
• Procarbazine
• Temozolomide

On the other hand, the chemo drugs that have a low risk of damaging the eggs include:

• 5-fluorouracil (5-FU)
• Bleomycin
• Cytarabine
• Dactinomycin
• Daunorubicin
• Fludarabine
• Gemcitabine
• Idarubicin
• Methotrexate
• Vinblastine
• Vincristine

Talk to your doctor about the chemo drugs you will get and the fertility risks that come with them.

**Chemo and pregnancy**

**Age makes a difference:** The younger you are, the more eggs you usually have in your ovaries. This gives you a higher chance to keep some fertility in spite of damage from treatments. Women who are treated for cancer before they are 35 have the best chance of becoming pregnant after treatment. Some women in their teens or twenties never stop having periods. Young women who stop having menstrual periods during treatment may have a return of periods again after they are off chemo for a while.

**After chemo, fertility may not last as long:** Girls who had chemo before puberty (the time when periods begin) or young women whose menstrual periods start back after chemo are at risk for early (premature) menopause. When a woman stops having periods before age 40, long before the average age (about 51), it’s considered premature ovarian failure or primary ovarian insufficiency. She
becomes infertile because her ovaries stop making the hormones needed for fertility: estrogen and progesterone.

**Having periods doesn’t always mean fertility:** Even if a woman’s periods start back after cancer treatment has stopped, her fertility is still uncertain. Usually some eggs are destroyed by cancer treatment. You may need a fertility expert to help you find out if you are fertile or learn how long the fertility window may last.

**Avoid getting pregnant during chemo:** Many chemo drugs can hurt a developing fetus, causing birth defects or other harm. You might be fertile during some types of chemo, so you’ll need to use very effective birth control. Talk with your doctor about this. Remember, too, that some women can get pregnant even when their periods have stopped. For this reason, it’s important to use birth control whether or not you have periods.

**If you get pregnant too soon after chemo, it can harm the baby:** Women are often advised not to get pregnant within the first 6 months after chemo because the medicine may have damaged the eggs that were maturing during treatment. If a damaged egg is fertilized, the embryo could miscarry or develop into a baby with a genetic problem. Studies about this are hard to find. This is something you should talk to your doctor about before trying to become pregnant.

See [Chemotherapy](#) for more information.

**Targeted and immune therapies**

Targeted drugs attack cancer cells differently from standard chemo drugs. Use of these medicines has increased a lot in recent years, but little is known about their effects on fertility or problems during pregnancy. Bevacizumab (Avastin®) is one exception – studies have found that this drug can cause ovarian failure, and some women’s ovaries never recover.

Some targeted drugs (thalidomide and lenalidomide) have such a high danger of causing **birth defects** that women are asked to use two effective types of birth control while taking them.

Another group of drugs that are of concern are targeted drugs called **tyrosine kinase inhibitors** (TKIs) such as imatinib (Gleevec®), which cause birth defects in lab animals. At this time the recommendation is that women talk to their doctors before becoming pregnant while taking TKIs.
See Targeted Therapy and Cancer Immunotherapy to learn more about these cancer treatments.

It’s very important to talk to your doctor about any targeted or immunotherapy drugs you will get and the fertility risks that might come with them.

**How a bone marrow or stem cell transplant can affect fertility in women**

A bone marrow or stem cell transplant usually involves high doses of chemo and sometimes radiation to the whole body before the transplant. In most cases, this permanently stops a woman’s ovaries from releasing eggs. Talk with your doctor or nurse about this risk before starting treatment. See Chemotherapy and Radiation Therapy for more on these parts of the transplant procedure.

To learn more about transplants, see Stem Cell Transplant for Cancer.

**How radiation therapy can affect fertility in women**

Radiation treatments use high-energy rays to kill cancer cells. These rays can also damage a woman’s ovaries. For a woman getting radiation therapy to the abdomen (belly) or pelvis, the amount of radiation absorbed by the ovaries will determine if she becomes infertile. High doses can destroy some or all of the eggs in the ovaries and might cause infertility or early menopause. Most women getting pelvic radiation will lose their fertility, but about half may keep some eggs alive if the ovaries are moved further from the target area in a minor surgery before radiation begins.

Even if the radiation is not aimed right at the ovaries, the rays can bounce around inside the body and might still damage the ovaries. When radiation is directed inside the vagina, the ovaries absorb a high dose of radiation.

Radiation to the uterus can cause scarring, which decreases the flow of blood to the uterus and also makes the uterus unable to stretch to full size during pregnancy. Women who have had radiation to the uterus have an increased risk of miscarriage, low-birth weight infants, and premature births. These problems are most likely in women who had radiation during childhood, before the uterus began to grow during puberty.

Sometimes radiation to the brain affects the pituitary gland. The pituitary gland normally signals the ovaries to make hormones, so interfering with these signals can affect
ovulation (the release of eggs from the ovaries). This might or might not affect fertility depending on the focus and dose of the radiation.

You may be fertile when you start getting radiation treatments, but it’s important not to become pregnant until treatment is completed because radiation can harm the fetus. Talk with your doctor about this.

You can get more details about this type of treatment in Radiation Therapy.

**How surgery can affect fertility in women**

Surgery on certain parts of the reproductive system can cause infertility. For some cancers, a hysterectomy is part of the treatment. A hysterectomy is surgery to remove the uterus (womb) either through the vagina or through a cut made in the abdomen (belly). Once the uterus is removed, a woman cannot carry a child. A very few women have now had babies by having a uterus transplanted into their body, but this is a very complicated, risky procedure. The woman needs to take drugs to suppress her immune system. The new uterus must be removed either when the baby is born, or maybe after a second birth.

The ovaries might be removed (called an oophorectomy) at the same time the uterus is taken out. Without ovaries, a woman can’t get pregnant because she no longer has any eggs. In some women with early stage ovarian or cervical cancer, the surgeon will try to save one ovary, if possible, to preserve eggs, which might still allow a woman to become pregnant. Keeping at least one ovary also preserves the hormones that prevent menopause symptoms like hot flashes and vaginal dryness.

Some women with small cervical cancers can have a surgery called a trachelectomy, which removes the cervix but leaves the uterus behind so a woman can carry a pregnancy. (See Radical trachelectomy in Preserving Fertility in Women with Cancer.)

Sometimes surgery can cause scarring in the fallopian tubes. These scars may block the tubes and prevent eggs from traveling to meet the sperm. This means they can’t become fertilized and move on to the uterus to implant in the lining.

Cancer Surgery gives you more information on surgery as a cancer treatment.

**Other treatments that can affect fertility in women**

Hormone therapies used to treat breast cancer or other cancers can affect your ability to
have a child. Women taking tamoxifen can get pregnant, but it also causes birth defects, so women are advised to use effective birth control while taking it. Other hormone therapies may prevent ovulation completely, since a woman is put into temporary menopause.

The effect of some other treatments on fertility and pregnancy is not yet known. It’s always best to talk to your doctor, nurse, or other member of your health care team about your treatment and any possible effects on your sexual function and fertility.

• References


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