

BMDA Cancer and Fertility: Treatment Side Effects and Preservation Options

Cancer treatment may impair a person's ability to have children later in life. For women, these therapies can cause ovarian damage that can lead to genetically damage oocytes (eggs), ovarian failure, early menopause, or other reproductive problems. For men, treatments can similarly cause damage to the testes that interfere with sperm production and testosterone secretion. As cancer treatments improve and survivorship increases, fertility preservation options in women, men, and children become an increasingly important topic. Fortunately, multiple options exist to maximize your future fertility potential.



Before starting cancer treatment, men and women who may want to have a child in the future should discuss their fertility preservation options with their oncology team. A referral to a reproductive endocrinologist who specializes in onco-fertility may also need to be placed. At Baptist MD Anderson Cancer Center, we work with the community's leading reproductive endocrinologists to provide individualized treatment options to maximally preserve the future fertility of our patients whenever possible. Consultation with the reproductive endocrinologists should be done as early as possible after the diagnosis of cancer, and optimally prior to chemotherapy or pelvic radiation.

The below information will provide you with the following:

- Emotional and psychological aspects of fertility preservation
- Potential treatment of fertility-related side effects for women diagnosed with cancer
- Potential treatment of fertility-related side effects for men diagnosed with cancer
- Fertility options available
- Local reproductive endocrinology centers and treatment options
- Local and national resources available

Emotional and Psychological Aspects of Fertility Preservation

A cancer diagnosis and future treatment can often cause anxiety and stress. Fertility planning can add stress and lead to a strong emotional reaction. Baptist MD Anderson Cancer Center, as well as the community of reproductive endocrinology centers, have many team members who are trained to help you deal with the emotional aspects of cancer as well as to address your reproductive concerns. If you reach out for help within the community for emotional aspects of fertility preservation, be sure to ask to speak with a fertility psychologist.

Potential Fertility-Related Treatment Side Effects and Fertility Options for Women Diagnosed with Cancer

Many young women who face a cancer diagnosis want to have children in the future. There are options to help protect your fertility. **The best time to preserve your fertility is before you begin cancer treatments.**

Ask your health care team about fertility-saving options as soon as possible after your cancer diagnosis.

Chemotherapy (chemo), radiation therapy and some surgeries can harm or destroy the eggs or cause other fertility problems. Often, chemo or radiation therapy can stop your periods for a while (amenorrhea) or make them irregular. Your periods may continue or return after treatment, but having periods does not always mean that you are fertile. In some cases, periods may never return.

Chemo or radiation therapy can cause infertility right away or years later by causing you to go into early menopause. Premature ovarian insufficiency (POI) is the end of your periods before age 40. Surgery that removes both ovaries also causes menopause right away.

Your cancer treatment may affect your ability to carry a pregnancy. For instance, high-dose radiation to the pelvic region can raise the risk of a future miscarriage or cause premature birth. If you have had surgery to remove your uterus (hysterectomy) you cannot get pregnant.

Chance of Infertility

Not all women become infertile after cancer treatment. The impact that cancer treatment may have on fertility depends on many factors. These include your:

- Cancer type and stage
- Chemotherapy type and dose
- Location and dose of radiation
- Surgery site
- Age at the time of your treatment
- Fertility before you start cancer treatment

Surgery and Fertility

Surgery is a common treatment for cancers of the ovary and uterus. Both ovaries and/or the uterus may be removed. If this happens, a woman will be infertile. If both ovaries are removed, menopause is permanent. Without a uterus, a woman cannot become pregnant.

Radiation and Fertility

Radiation to the Ovaries

Radiation to the pelvic area may damage the ovaries. If your ovaries only get a small dose of radiation and you are young, your periods may start again. However, some of the eggs in your ovaries may be destroyed by the radiation. The number of eggs left in your ovaries (ovarian reserve) is smaller. You may go into permanent menopause at a younger age than normal.

Radiation to the Brain

Radiation to or near the brain can affect a woman's fertility. The hypothalamus and pituitary glands control hormone production in the brain. Treatments to these areas can change a woman's period.

Radiation and the Uterus

Radiation to the pelvis may damage the uterus. This is often true if you received treatment as a child or teen. Your uterus will not grow to full size. It is not able to stretch to make room for a growing baby. Radiation also reduces some of its blood supply.

If you do get pregnant, you will be at risk of having a miscarriage, a premature baby or a baby who does not grow to a healthy birth weight.

Cancer Treatments That Spare Fertility

Doctors try to spare fertility when possible. The following are examples of treatments that may have a lower impact on your fertility.

- Conservative surgery for certain types of ovarian tumors. This is when doctors remove a part of or only one ovary (instead of removing both ovaries).
- Conservative surgery for early stage cervical cancer. This is when a portion of the cervix (conization) or just the cervix (trachelectomy) is removed instead of removing the entire uterus.
- Milder combinations of chemo for Hodgkin lymphoma.
- Surgically moving ovaries out of the radiation treatment area to protect them from radiation damage.

Potential Fertility-Related Treatment Side Effects in Men Diagnosed with Cancer

It is common for men with cancer to have a temporary drop in semen quality. Semen quality includes:

- Sperm count (how many sperm are in a man's semen)
- Sperm motility (ability of sperm to swim to the egg)
- Sperm morphology (the percent of sperm with normal shapes)

Chemotherapy and Fertility

Chemotherapy (chemo) may damage sperm cell production in the testicles. The damage may be temporary or permanent. This depends on the chemo medicines and amount given.

The medicines that may cause infertility are the alkylating chemo medicines. Some of these include:

- Ifosfamide
- Cyclophosphamide
- Busulfan
- Nitrogen mustard

The risk of infertility increases as the dose of chemo increases.

Surgery and Fertility

Most cancer surgeries do not damage a man's fertility. However, surgery to the pelvic area may affect fertility.

Testicular Cancer

Men with testicular cancer usually have 1 testicle removed. A man can still be fertile with only 1 testicle. If the remaining testicle is not functioning normally, it might not make enough healthy sperm. If both testicles are removed, infertility is permanent.

Prostate Cancer

Some men have both testicles removed to treat advanced prostate cancer. If both testicles are removed, infertility is permanent.

Radiation and Fertility

Radiation treatment to an area near the testicles may damage sperm production. Infertility may be temporary or permanent.

Men who have radiation to their whole body may have permanent infertility. This can happen in patients preparing for a stem cell or bone marrow transplant.

Radiation to the prostate can decrease the amount of semen a man ejaculates. He may have dry orgasms or just a few drops of semen.

Radiation to the Brain

Radiation to the brain can damage parts of the brain called the hypothalamus and pituitary gland. These areas of the brain control sperm production in the testicles. If they are damaged, a man may be unable to make sperm.

Local and National Resources Available

MD Anderson The Learning Center: <http://mdandersontlc.libguides.com/fertility>

LIVESTRONG fertility website: <http://www.livestrong.org/we-can-help/fertility-services/#>

The American Society for Reproductive Medicine Patient website: www.ReproductiveFacts.org

Reproductive Endocrinology Centers and Treatment Options

These reproductive endocrinology centers provide the following services to patients whose fertility may be affected by cancer and its treatment.

Common Program Services:

- Fertility education
- Counseling before and after cancer treatment
- Fertility assessment
- Options for parenthood
- Fertility preservation methods /options
- Ovarian suppression with GnRH analogs
- Collaborative care with your oncologist

Common Fertility Preservation Methods/Options:

- Donor egg
- Donor sperm
- Embryo (fertilized egg) freezing
- Gestational surrogate
- In vitro maturation (oocytes)
- Oocyte (unfertilized egg) freezing
- Ovarian suppression
- Ovarian tissue freezing
- Sperm banking
- Testicular sperm aspiration or extraction

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