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Preserving Fertility in Children and Teens with Cancer

Fertility refers to having the ability to conceive or being able to have a child. When a person cannot have a child, this is called infertility, or being infertile. Problems with fertility can also be called **reproductive problems** or **alterations**. They happen when certain hormone levels are abnormally low or high or if reproductive organs are removed or aren't working properly because they've been damaged or are abnormal in another way.

People with certain types of cancer or who are getting treatment for cancer may have fertility problems. You can read more about specific adult and childhood cancers in [Cancer A to Z](#)¹.

Talking about fertility concerns in children and teenagers with cancer

People who have been treated for cancer as children or teenagers (adolescents) are often of special concern when it comes to thinking about having children. Certain types of cancer surgery can remove organs needed to have a pregnancy, and certain treatments might damage sex organs or affect hormone levels. Some children and teenagers lose their fertility for a short time because of cancer treatment and sometimes treatment can cause complete and irreversible infertility.

It's important to talk with your child's cancer care team about the risk of infertility with the specific cancer treatment they will get. It's best that discussions about preserving fertility take place before cancer surgery happens or before treatments begin. **Don't assume your child's doctor or nurse will ask if fertility is important to you or your child.**

Experts recommend doctors who are part of the cancer care team be involved in talking

about fertility with patients, including pediatric oncologists, radiation oncologists, hematologists, pediatric oncologists, surgeons, nurses, and others. The experts recommend the following:

- The cancer care team should talk about any possible fertility problems that might happen before the surgery or treatment or as early as possible.
- Parents who are interested in preserving their child's fertility, might be thinking about it, or want to learn more, should be referred to a reproductive specialist.
- The cancer care team should start talking about preserving fertility as early as possible, too, meaning before treatment starts.
- Referrals to counseling should be made for parents and their children who may be anxious or distressed about fertility-related effects.

Not only should the oncology team discuss fertility with the parents, but it should also be mentioned to the child as soon as they are old enough to understand. If they are not old enough to discuss fertility while treated for cancer, parents may need to tell them about it around the time that puberty begins. A follow-up visit at the oncology clinic is often a good time to bring up the topic.

Given the chance, many parents will want to save their child's fertility. If the child is old enough to understand fertility issues when being treated, they should be asked if they agree to the treatment. Even though they're not able to give full legal consent because of age, a child who can understand must generally agree (this is called *assent*) before a procedure can be done. The parents also must give consent before a procedure, after being told the risks, complications, and success and failure rates.

Learn more about how you can start talking about your child's fertility with the cancer care team in [How Cancer and Cancer Treatment Affect Fertility²](#).

If your child or teenager identifies as lesbian or gay, or is a transgender or gender non-conforming person, please talk to their cancer care team about any needs that are not addressed here.

Fertility options for girls before puberty

Females are normally born with all the eggs they will need for their entire life. But, they do not produce mature eggs until they go through puberty. Because of this, the recommended and most effective way to preserve fertility in girls who are having cancer treatment before puberty is to remove and **freeze ovarian tissue**.

Tissue from the girl's ovaries is removed in an outpatient surgical procedure, then stored and frozen for the future.

There may be other experimental options available by enrolling your daughter in a study. When you see a fertility doctor, ask about any [clinical trials](#)³ that are going on. It's possible you may have to travel to another city or a research center if you'd like to be part of a research study.

Even without special measures to preserve fertility, many girls will go through puberty and start having periods after cancer treatment, but they may still need to have their hormone levels checked to find out their potential for fertility and/or early menopause. Some who are fertile in young adulthood may go through early menopause before they have time to have a family. Even the best hormone tests cannot always accurately predict the future. It's best to see a fertility specialist early in your daughter's reproductive years, soon after puberty. Some young women who have developed mature eggs may choose to freeze them to preserve fertility in case of early menopause.

See egg (oocyte) freezing and embryo freezing in [Preserving Fertility in Females With Cancer](#)⁴ for more on these procedures.

Fertility options for girls after puberty

After puberty, a girl has developed mature eggs and can have some eggs or fertilized embryos frozen. Most girls begin puberty somewhere between ages 9 and 15.

If radiation is needed to treat cancer, and is to be aimed at the abdomen (belly), sometimes the ovaries can be shielded. In some cases, the ovaries can be surgically moved aside, out of the radiation area. They can be put back into the normal position (or might move back on their own) after treatment. This is called ovarian transposition.

Many girls treated for cancer after puberty will have their periods return, but many who are fertile as young adults may go through early menopause. It's important for your daughter to know that even if she has normal periods, she could still need to see a fertility specialist because of hormone problems. It's best to see a specialist early in your daughter's reproductive years, soon after puberty. She may choose to freeze eggs in her late teens or early twenties to preserve her fertility in case treatment causes early menopause.

For more details on ovarian shielding and ovarian transposition see [Preserving Fertility in Females With Cancer](#)⁵.

Fertility options for boys before puberty

At this time, there are no effective ways to preserve fertility in pre-adolescent boys. Pre-adolescent males have not yet started puberty and do not make sperm, so there is no sperm to freeze and bank (cryopreserve). Some fertility centers offer **experimental** techniques called **testicular tissue extraction and freezing** for some pre-adolescent males. Although there are no sperm available to freeze in these boys, the hope is that the germ cell stem cells that are cryopreserved with testicular tissue will develop later to produce mature sperm.

Testicular tissue extraction in pre-adolescent boys

In this experimental procedure, testicular tissue is removed from a boy with cancer before treatment has begun. These procedures are often done while the patient is undergoing another needed procedure in the operating room, such as surgery to put in a vascular access device or a bone marrow biopsy. The idea is that the tissue will contain sperm stem cells that will one day in the future be used to produce mature sperm.

The average cost of testicular tissue freezing in the pre-adolescent male varies from one center to another, so you will want to ask about the extraction, freezing and annual storage costs.

Fertility options for boys after puberty

For adolescent males with cancer who are producing sperm, the discussion about risks to fertility threats and fertility preservation are best begun at the time of cancer diagnosis. Young males have varying levels of maturity and understanding of their reproductive development. However, most young males will have already have learned about puberty and development at school. What they have already learned can be used as an opener to help move into the discussion about fertility preservation.

When boys go through puberty, they begin to make mature sperm. Studies have found that testicular volume, not age or reproductive hormone levels, is the best way to know if a boy is able to make sperm. Some experts recommend all boys with testicular volumes of more than 5 ml should be offered semen banking before cancer treatment.

Most boys have some sperm in their semen by about age 13. If a boy has already gone through puberty, sperm banking is likely a good option, since the frozen samples are not damaged by long periods of storage.

Both emotional and physical maturity must be considered. Young teens often feel very anxious about masturbating to produce a semen sample, especially if they must talk about it with their parents or have not done it before. Some teens may have an easier time if they are given a vibrator to use in the collection room. Infertility clinics often have medical grade vibrators, making collection into a more “medical” procedure that may be less distressing.

Even if their testicles end up making normal levels of testosterone after treatment for cancer, sperm production might still be damaged. Boys who do not have a normal puberty might be able to take replacement hormones, if they are safe based on the type of cancer and future risks. These can help trigger and support development of an adult male body type. After puberty starts, a doctor can check your son’s hormone levels, and can check his semen to see if he is making sperm. Even if he does not produce normal amounts of sperm, your son may be able to have sperm removed surgically to fertilize an egg when the time comes to try for a pregnancy with a partner.

Electroejaculation or sperm extraction procedures have also been used. See Electroejaculation and Sperm extraction and aspiration procedures in [Preserving Fertility in Males with Cancer](#)⁶.

Hyperlinks

1. www.cancer.org/cancer/all-cancer-types.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/how-cancer-treatment-affects-fertility.html
3. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
4. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-women-with-cancer/preserving-fertility-in-women.html
5. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-women-with-cancer/preserving-fertility-in-women.html
6. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-men-with-cancer/preserving-fertility-in-men.html

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Last Medical Review: February 5, 2020 Last Revised: February 5, 2020

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