

## **Preserving Fertility in Children With Cancer** [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 12/2012

### **Key Messages:**

- Some types of cancer treatment can affect your child's future fertility (ability to have children).
- There are ways to help preserve fertility for both boys and girls, but options are limited for children who are diagnosed with cancer before puberty.
- Before treatment begins, talk with your child's doctor about the possible fertility-related side effects of treatment and fertility-preservation options.

If your child has been diagnosed with cancer, it can be difficult to think beyond the coming days or weeks. However, with long-term survival rates now at more than 80%, fertility often becomes an issue as survivors of childhood cancers become young adults.

Although some cancer treatments have little to no effect on a child's developing reproductive system, others are likely to damage the testes or ovaries, leading to temporary or permanent infertility. Chemotherapy, radiation therapy, and surgery all can have lasting effects on a child's reproductive health. The risk of developing these [late effects](#) [3] depends on your child's diagnosis and treatment plan. Your child's doctor can tell you if there's a chance that the planned treatment(s) or dose might damage the reproductive system.

Not only should your child's health care team discuss potential fertility-related side effects with you, but you will also need to explain the impact of cancer treatment on fertility to your child with the help and support of your child's doctors and nurses. This discussion should take place as soon as you feel your child is old enough and mature enough to understand.

### **Cancer treatment and fertility**

A type of chemotherapy known as alkylators is more likely cause infertility than others. Drugs that fall into this group include cyclophosphamide (Cytoxan, Neosar), ifosfamide (Ifex), procarbazine (Matulane), busulfan (Busulfex, Myeran), and melphalan (Alkeran). Other drugs, like vincristine (Oncovin, Vincasar PFS) and methotrexate (multiple brand names), usually are less likely to affect fertility. Some of these drugs may also disrupt a girl's ability to have menstrual periods (periodic discharge of blood and tissue from the uterus that occurs in a woman from puberty until menopause except during pregnancy) and/or cause early menopause (time of life when

menstrual periods stop).

Radiation treatments focused at or near the pelvic area, abdomen, spine, and/or the whole body can damage the testes, which contain sperm in boys, or the ovaries, which contain the eggs in girls. As a result, radiation therapy may interrupt menstruation in girls or reduce sperm count and motility (movement) in boys?these conditions may be permanent or may reverse after the treatment. Children who have radiation to certain areas of the brain may also experience fertility-related side effects.

If the cancer is found in the reproductive organs, the doctor might recommend surgery to remove part or all of these organs to get rid of the cancer. Learn more about the effects of cancer treatment on fertility .

### **Fertility-preserving options for children**

Most parents, when given the choice, want to preserve their child?s future fertility. If children are old enough to understand fertility before starting treatment, they should be asked if they want to have any procedure intended to help preserve their fertility. Even though children and teens are not able to give full legal consent because of their age, a child who can understand must generally agree (called assent) before these procedures can be done. Parents also must give consent before the procedure, after being told the risks, potential complications, and success and failure rates.

Unfortunately, the current fertility-preserving options for boys and girls who are diagnosed with cancer before puberty are very limited, and the costs of these options can be high. Learn more about [ASCO?s recommendations for preserving fertility \[4\]](#).

### **Girls**

If your daughter is receiving radiation to her pelvic area, it may damage her uterus. This could make it hard for her to maintain a pregnancy later in life. Scarring from radiation can reduce blood flow and keep the uterus from expanding fully. If radiation therapy is planned for the abdomen (stomach area), sometimes the ovaries can be protected. In some cases, the ovaries may be surgically moved outside the radiation area. They will then be returned to their normal location after treatment.

If preventing damage to the ovaries is not possible there are a few other options.

**Egg or embryo freezing.** After puberty, which usually occurs between the ages of 9 and 15, a girl can have her eggs or embryos frozen. Embryo freezing is a technique in which eggs are taken from the ovaries, fertilized in a lab, and then frozen and stored. This technique is less commonly used in girls and teens than adult women (because it requires sperm from a partner), but it is possible to use donor sperm to fertilize the eggs. Since this method requires about two weeks of fertility drug treatment, it is not ideal for girls who need to start their cancer treatment as soon as possible. Therefore, this prevents many girls from being able to store their eggs.

**Ovarian tissue freezing.** Because girls do not produce mature eggs until they go through puberty, there are no proven fertility-preserving options for girls who have cancer treatment

before puberty. One experimental procedure is to surgically remove ovarian tissue and freeze it for the future. However, because this procedure is still under investigation, not all hospitals or clinics have access to the technology, and success rates vary. In some cases, your child's doctor may recommend not to preserve ovarian tissue because it could reintroduce cancer cells when it is put back into the body later on.

## **Boys**

For boys undergoing cancer treatment it is also possible to prevent or minimize the damage done to the reproductive system. For example, if your son is getting radiation, it may be possible to shield his testicles. However, if there is still a risk of future infertility, there are a few fertility-preserving options available.

**Sperm cryopreservation (sperm banking).** For boys who have gone through puberty, sperm banking or "cryopreservation" is a common, non-invasive option to consider. Most boys have some sperm in their semen by about age 13. Sperm are collected and frozen for storage in a specialized facility. Some hospitals have sperm bank programs, but you may have to go to a clinic that specializes in sperm banking.

**Testicular tissue freezing.** For boys and younger teens who have not yet gone through puberty, it may be possible to preserve sperm by freezing testicular tissue. Some tissue from the testicles is collected and frozen with the hope it will contain stem cells that will later produce mature sperm. The thawed tissue might be reinserted into the young man's testicle or stem cells might be taken out and injected into the testicle. This procedure is still experimental so it may or may not be effective. Your doctor may advise against it because of the risk that cancer cells could be reintroduced when the tissue is put back into your son's body.

**Sperm aspiration.** This is another option that is currently being investigated for boys and younger teens who have not yet gone through puberty. During this procedure, immature sperm cells are removed for future use in in vitro fertilization (sperm are used to fertilize an egg outside of the uterus and then the fertilized embryo is transferred to the uterus).

Even if you decide not to take any special measures to preserve your son's fertility, many boys go through puberty without any issues after cancer treatment and are able to have children naturally. After puberty starts, a doctor can check your son's semen to see if he is making sperm.

## **Questions to ask the doctor**

It is important to talk with your child's doctor about how his or her treatment plan may affect future fertility. Consider asking your child's doctor the following questions:

- Could my child's treatment plan affect his or her ability to have children in the future?
- Will this treatment have any effect on my child's development through puberty?
- What are the chances this treatment will cause my daughter to experience early menopause?  
Can the treatment affect some organs (like the lungs or heart) in a way that will make it hard for her to carry a pregnancy to term?
- Are there other treatments that could be considered that do not pose as high a risk but are equally effective?

- What options are available to preserve my child's fertility before treatment begins? Will any of these interfere with the effectiveness of my child's cancer treatment?
- Would it be helpful to see a fertility specialist before treatment begins?
- If I'm worried about managing the costs associated with preserving my child's fertility, who can help me with these concerns?
- After treatment, how will we know if my child's fertility has been affected?

## **More Information**

[Ways to Preserve Fertility Before Cancer Treatment](#) [5]

[Cancer in Children](#) [6]

Moving Forward Videos: [Fertility for Young Adults with Cancer](#) [7]

## **Additional Resources**

[American Cancer Society: Preserving fertility in children with cancer](#) [8]

[MyOncofertility.org](#) [9]

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### **Links:**

[1] <http://www.cancer.net/navigating-cancer-care/children/preserving-fertility-children-cancer>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/24571>

[4] <http://www.cancer.net/node/25658>

[5] <http://www.cancer.net/node/29096>

[6] <http://www.cancer.net/node/25114>

[7] <http://www.cancer.net/multimedia/videos/young-adults-cancer/fertility>

[8] <http://www.cancer.org/Treatment/TreatmentsandSideEffects/PhysicalSideEffects/FertilityandCancerWhatAreMyOptions/fertility-and-cancer-preserving-fertility-children-cancer>

[9] <http://www.cancer.net/myoncofertility.org>