

Female Infertility

Some female cancer survivors find that they are not able to have children due to the effects of cancer treatment. By identifying your risk for infertility, you can take steps before treatment to preserve your fertility. For survivors who have already completed treatment, there are other options for having children.

Female Infertility: Detailed Information

This information is meant to be a general introduction to this topic. The purpose is to provide a starting point for you to become more informed about important matters that may be affecting your life as a survivor and to provide ideas about steps you can take to learn more. This information is not intended nor should it be interpreted as providing professional medical, legal and financial advice. You should consult a trained professional for more information. Please read the Suggestions (<http://www.livestrong.org/Get-Help/Learn-About-Cancer/Cancer-Support-Topics/Physical-Effects-of-Cancer/Female-Infertility#S#S>) and Additional Resources (<http://www.livestrong.org/Get-Help/Learn-About-Cancer/Cancer-Support-Topics/Physical-Effects-of-Cancer/Female-Infertility#AR#AR>) sections for questions to ask and for more resources.

Cancer and treatment can sometimes put female survivors at risk for infertility.

Infertility is generally defined as not being able to get pregnant or maintain a pregnancy for a time. This is often considered to be a period of trying for more than one year.

There are many different causes of infertility in cancer survivors. As a rule, it is best to discuss your risks with your doctor before treatment begins. However, there are often options for cancer survivors who have already experienced infertility as a result of cancer or its treatment. Set up an appointment with your gynecologist or another member of your health care team to discuss any fertility concerns or questions. Ask for a referral to a fertility clinic or specialist for expert help with this issue.

The possibility of infertility may have an emotional effect. If you want to have children, it is understandable that thinking about this can result in feelings of sadness or being upset. This document outlines the physical causes of infertility and options for survivors who may have difficulty having children. It does not discuss the emotional effects. Talk with your health care team if you think that infertility may be having an impact on your emotional well-being. Ask for a referral to a licensed counselor who has experience dealing with this type of concern.

Who might be at risk for infertility?

There may a risk of infertility in female cancer survivors who have:

- Treatment that directly affects the reproductive organs
- Surgery that removes the uterus, fallopian tubes or ovaries
- Radiation treatment directed to cancer in the abdomen

Some chemotherapy medicines can also cause infertility. These types of medicines may be used to treat many different kinds of cancer, not just cancers that affect the reproductive organs. Chemotherapy may reduce the number of eggs in the ovaries or cause early menopause. Menopause happens when menstrual periods stop because the ovaries run out of eggs. If you are in menopause, it means there are no eggs left or that the remaining few eggs are not healthy.

The table below lists some of the chemotherapy medicines that can damage ovaries. You might want to discuss this table with a member of your health care team if you are not sure which medicines you received during your treatment.

Risk of Harm to the Ovaries	Generic Names of Medicines	Brand Names of Medicine
High Risk	Cyclophosphamide	Cytosan
High Risk	Chlorambucil	Leukeran
High Risk	Melphalan	Alkeran, Medphalan, Merphalan, Sarcolysin
High Risk	Busulfan	Myleran
High Risk	Nitrogen Mustard	Mustargen
High Risk	Procarbazine	Natulan, Matulane
Intermediate Risk	Cisplatin	Platinol, Platinol-AQ
Intermediate Risk	Adriamycin	Doxorubicin
Intermediate Risk	Bleomycin	Blenoxane, Bleomycin
Intermediate Risk	Actinomycin D	Dactinomycin, Cosmegen
Low Risk	Methotrexate	Rheumatrex, Folex PFS
Low Risk	5-Fluorouracil	Adrucil

What are some symptoms of infertility?

Some survivors do not realize that fertility has been affected until they try to have children and are not able to get pregnant. The following are some symptoms of infertility. However, if you experience any of these symptoms, it does not always mean you are infertile. They might be symptoms of other medical conditions.

Talk to your doctor if:

- Your menstrual cycles are not regular
- You are having hot flashes
- It hurts when you have sex
- You have been trying but have not been able to get pregnant
- You have had several miscarriages

Female cancer survivors who completed puberty before starting treatment often stop menstruating during treatment. This is not necessarily a sign of infertility. A woman's period should return within six months of completing treatment. If it has not returned within a year, there may be concerns about infertility. If this is a concern of yours, talk you're your doctor about how long it has been since your last period. Keep in mind that this may or may not be related to fertility. However, it is important to find out if there is a physical problem that needs treatment.

Some survivors still have healthy eggs and can easily get pregnant after treatment, but they may have problems carrying the baby to full term. This usually is not because of cancer treatment. However, it is a problem that should be discussed with a gynecologist.

Your health care team may want to run tests to find out if you are experiencing premature or immediate menopause. Infertility can happen after menopause or in the few years preceding it because there are no eggs left or the remaining few eggs are not healthy. The Follicle Stimulating Hormone (FSH) measurement is one test used to determine if a woman is in menopause. If FSH levels are high, there may be a need to use donor eggs to get pregnant.

Your health care team may check your ovarian tubes and uterus to determine whether there is damage to these organs that might cause infertility. Damage to ovaries can happen with pelvic or abdominal surgery for cancer.

When is the best time for cancer survivors to consider their fertility?

If you have not yet started treatment for cancer, discuss fertility risks with a fertility specialist before you begin treatment. Ask your doctor to refer you as soon as possible.

If you have already finished treatment, discuss your concerns about fertility with your health care team as soon as you decide that you want to have children. It is best to contact a fertility specialist as soon as you begin trying to have a child. This is because there may only be a small number of remaining eggs. If this is true, you could run out of eggs before realizing that you are having difficulties.

Even though women generally try to get pregnant for a year before seeing a fertility specialist, a cancer survivor may want to consider talking to a fertility specialist sooner than that.

What are some suggestions for survivors who want to preserve their fertility before, during or after treatment?

If you are interested in finding out more about how your cancer treatment may affect your fertility talk to your health care team. Ask them to help you find a fertility specialist who can guide you to take the best steps for your situation.

The following are fertility options to discuss with your health care team:

- In vitro fertilization (if you are not yet menopausal)
- Donor embryos
- Donor eggs
- Ovarian auto-transplantation (experimental)
- Surrogacy
- Adoption

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Works Cited

Oktay K and Karlikaya G. Ovarian function after autologous transplantation of frozen-banked human ovarian tissue. *N Engl J Med*, 342:1919, 2000.

Oktay K., Economos K, Rucinski J, Kan M, Veeck L, Rosenwaks Z. Endocrine function and oocyte retrieval after autologous transplantation of ovarian cortical pieces to the forearm. *JAMA*, 286:1490-1493, 2001.

Oktay K, Buyuk E, Davis O, Yermakova I, Veeck L, Rosenwaks Z. Fertility preservation in breast cancer patients: In vitro fertilization and embryo cryopreservation after ovarian stimulation with tamoxifen. *Human Reprod* 2003; 18(1):90-95.

Bines J, Oleske DM, Cobleigh MA. Ovarian function in premenopausal women treated with adjuvant chemotherapy for breast cancer. *J Clin Oncol*. 1996 May; 14(5):1718-29.

Meirow D, Nugent D. The effects of radiotherapy and chemotherapy on female reproduction. *Hum Reprod Update*. 2001 Nov-Dec; 7(6):535-43.

Goodwin PJ, Ennis M, Pritchard KI, Trudeau M, Hood N. Risk of menopause during the first year after breast cancer diagnosis. *J Clin Oncol*. 1999 Aug; 17(8):2365-70.

Table. Cytotoxic agents according to degree of gonadotoxicity

Female Infertility: Suggestions

The suggestions that follow are based on the information presented in the Detailed Information (<http://www.livestrong.org/Get-Help/Learn-About-Cancer/Cancer-Support-Topics/Physical-Effects-of-Cancer/Female-Infertility#DI#DI>) document. They are meant to help you take what you learn and apply the information to your own needs. This information is not intended nor should it be interpreted as providing professional medical, legal and financial advice. You should consult a trained professional for more information. Please read the Additional Resources (<http://www.livestrong.org/Get-Help/Find-More-Resources>) section for links to more resources.

Talk to your health care team about fertility concerns.

You may find it difficult or uncomfortable to talk with your health care team about your sexual health. The subject might seem very personal. However, talking to your health care team may be the only way you can get the help you need. It is important to get help with infertility as soon as possible.

Ask your health care team questions before starting cancer treatment such as:

- Will this treatment affect my fertility?
- Are there alternative cancer treatments with fewer side effects on fertility?
- Can I safely delay my cancer treatment to undergo a fertility preservation procedure?

Some questions to ask your health care team after treatment include:

- Is it safe for me to use fertility drugs?
- Is pregnancy safe for me?
- How long should I wait before I try to get pregnant?

If you have already finished cancer treatment and are thinking about fertility for the first time, set up an appointment with your oncologist. Discuss your past cancer treatment and any possible effects it may have had on your fertility. It may be that your fertility was not affected. If you are at risk of being infertile, your oncologist can refer you to a good fertility specialist for help.

Find a fertility clinic.

Fertility clinics that are located at major cancer centers are more likely to have specialists who are experienced working with cancer survivors. If your cancer center or hospital does not have its own fertility clinic or specialist, ask for a referral to another medical provider for these services.

Questions to ask a fertility specialist include:

- Do you have experience working with cancer survivors?
- Are the recommended fertility services covered by my health insurance? If not, what will the cost be to me?
- Are you experienced with this type of preservation method (such as egg, ovarian tissue and embryo freezing)?

Information on fertility programs can also be found on the Society of Assisted Reproductive Technology website (www.sart.org) and online through Fertile Hope (www.fertilehope.org).

Female Infertility: Additional Resources**LIVESTRONG Care Plan**

www.livestrongcareplan.org

This free online tool was created to help you develop a personalized plan for post-treatment care. It can help you work with your oncologist and primary health care provider to address medical, emotional and social challenges that may arise after cancer treatment is completed. By answering some questions related to your cancer treatment, you will receive information about your follow-up care. This information includes symptoms to watch for in the future and steps you can take to stay healthy.

LIVESTRONG Navigation Services

LIVESTRONG.org/Get-Help

Email: Send email through the LIVESTRONG website.

Phone: 855.220.7777 (English and Spanish)

Intake Coordinator is available for calls Monday through Friday, 9 a.m. to 5 p.m. (Central Time). Voicemail is available after hours.

LIVESTRONG offers assistance to anyone affected by cancer, including the person diagnosed, loved ones, caregivers and friends. The program provides information about fertility risks and preservation options, treatment choices, health literacy and matching to clinical trials. Emotional support services, peer-to-peer matching and assistance with financial, employment and insurance issues are also available. To provide these services, LIVESTRONG has partnered with several organizations including Imerman Angels, Navigate Cancer Foundation, Patient Advocate Foundation and EmergingMed.

Cancer Hope Network

www.cancerhopenetwork.org

Email: info@cancerhopenetwork.org

1-877-HOPE NET (1-877-467-3638)

Phone: This number is answered Monday-Friday, from 8:00 a.m. to 5:30 p.m. (EST).
Voicemail is available after hours.

Cancer Hope Network is a not-for-profit organization that provides free and confidential one-on-one support to cancer patients and their families. They offer support by matching cancer patients or family members with trained volunteers who have already undergone and recovered from a similar cancer experience. You can submit your request by phone or by email. A volunteer will try to contact you within 24 hours.

Fertile Hope

www.fertilehope.org

Email: fertilehope@fertilehope.org

Phone: 1-888-994-2353

Fertile Hope is a national, nonprofit organization dedicated to providing information, support and hope to cancer patients whose medical treatments present the risk of infertility. Fertile Hope works with cancer patients and survivors through programs of awareness, education, financial assistance, support and research. Fertile Hope produces a wide array of free publications for you to read or order. You can also download transcripts from lectures, teleconferences and events.

MyOncofertility.org

www.myoncofertility.org

MyOncofertility.org is a patient education resource provided by the Oncofertility Consortium. This website provides information and tools to educate young adults about fertility preservation options before, during and after cancer treatment. Resources include survivor videos related to fertility issues that were obtained through Gilda's Club in Chicago. The site contains 126 fertility expert videos and 90 cancer survivor stories.

RESOLVE: The National Infertility Association

www.resolve.org

Email: info@resolve.org

Phone: 1-703-556-7171

RESOLVE: The National Infertility Association provides support, education and advocacy to those dealing with infertility. The website provides timely information related to all family building options, including assisted reproductive technology, third party donors, adoption, and living childfree. The website offers information about local RESOLVE support groups, educational events, and facts about state insurance coverage for the diagnosis and treatment of infertility. There are also a variety of RESOLVE publications and online social networking communities.

Society of Assisted Reproductive Technology

www.sart.org

Email: jzeitz@asrm.org

Phone: 1-205-978-5000, ext. 109

The Society for Assisted Reproductive Technology is an organization of medical professionals who treat infertility. SART promotes and advances the standards for the practice of assisted reproductive technology. The website includes information on assisted reproductive technologies such as in-vitro fertilization, gamete intrafallopian transfer and tubal embryo transfer. Information includes step-by-step descriptions of some procedures and a look at both the financial and emotional effects of assisted reproductive technology. The site also includes a search tool to find practitioners in your area and links to other resources.

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