Male Infertility

What is male infertility?

Cancer and its treatment may sometimes put male survivors at risk for infertility. Infertility means not being able to produce healthy sperm or to ejaculate sperm. There are many different causes for infertility in cancer survivors. While it's best to discuss your risk for infertility before treatment begins, there are still options for cancer survivors who may experience infertility as a result of cancer or its treatment but want to have children. Infertility or even just knowing you have a risk of infertility may affect you emotionally. If you want to have children, it's perfectly understandable that thinking about infertility makes you feel sad or upset. This document outlines the physical causes of infertility and options for survivors who may have difficulty having children.

If you are worried about infertility, set up an appointment with an urologist or other member of your health care team to discuss any concerns or questions you have about the information in this document.

What causes male infertility?

Men's fertility can be damaged by many different factors. Some causes are listed below.

Genetic: Male infertility can be inherited, especially when a man's Y-chromosomes are missing a tiny piece of genetic code. Men who have genetic causes for their infertility may pass the problem to their sons if they are able to father a child using newer infertility treatments.

Hormonal: Men whose hormones are out of balance can become infertile. This can sometimes be related to cancer and/or treatment for cancer.

Physical: Some men are born without parts of the tubes that form the pathway for ripe sperm to travel to the areas near the prostate where they mix with the liquid parts of semen just before a man ejaculates. These tubes can also be blocked by scar tissue after injury or infection. Also, varicoceles, clusters of enlarged veins in the testicles, can lower sperm counts.

Disease-related: Some diseases-such as cancer, diabetes, mumps orchitis or tuberculosis-can cause low sperm counts.

Environmental: Exposure to high heat, microwaves or pesticides can affect fertility.

Lifestyle factors: Obesity, tobacco use, heavy drinking and using anabolic steroids for body-building can affect the quality of a man's semen.

Age: Semen quality can decrease with age.

Cancer and/or treatment for cancer: Some types of cancer treatment may interfere with a man's fertility, either temporarily, or permanently

Which cancers are most likely to cause male infertility?

Some cancers are more likely to cause male infertility.

Survivors of testicular cancer: Fertility may be poor in the two years before testicular cancer is found. Although only 1 to 3 percent of men with testicular cancer get cancer in both testicles, the cancer-free testicle often is not totally normal.

Men newly-diagnosed with Hodgkin's disease, lymphoma or leukemia: The recent surgery, fever or physical stress these survivors can experience can often affect their semen quality.

Which cancer treatments are most likely to cause male infertility?

Usually, the cancer treatment, not the actual cancer, damages a man's fertility. Radiation and chemotherapy kill cells that are in the middle of dividing and growing, when they are easier to damage. Cancer cells divide much more often than most normal body tissues, so they are killed off while normal cells survive. However, hair and sperm cells also grow constantly, making them sensitive to chemotherapy or radiation.

Radiation
If the testicle is in or near the target area for the radiation, radiation therapy can slow down or stop sperm cell production. Lead shields can protect the testicles during radiation aimed at a nearby organ like the prostate, but radiation may still scatter to the testicles. Total body irradiation, used before some bone marrow transplants, usually causes permanent infertility.

If the testicles get a mild dose of radiation, a man's fertility may drop, but then can recover over the next one to four years. If the radiation dose to the testicles is high, sperm production may stop forever. This happens because the spermatogonia, stem cells in the testicles that divide and grow to produce mature sperm during a man's adult life, are destroyed.

Radiation that damages parts of the brain that control hormone production can sometimes prevent the hormone messages from getting to the testicles.

Chemotherapy
In high doses, cis-platinum chemotherapy (Platinol) or bleomycin (Blenoxane, Bleomycin), often used to treat testicular cancer, can also damage fertility.
The alkylating chemotherapy group does the most damage to fertility. These drugs include: cyclophosphamide (Cytoxan), chlorambucil (Leukeran), busulfan (Myleran), procarbazine (Natulan, Matulane), nitrosoureas (Carmustine, Lomustine), nitrogen mustard (Mustargen), and L-phenylalanine mustard (Alkeran).
If a man gets two or more alkylating medicines, has higher doses of chemotherapy, or has a combination of chemotherapy and pelvic radiation, he is at higher risk for infertility.

Surgeries
Radical surgery to treat prostate or bladder cancer removes the prostate and seminal vesicles, glands that make the liquid part of a man's semen. They also cut the pathway for sperm cells to be included in the semen.

Men with testicular cancer or colon cancer sometimes have surgery that damages nerves involved in orgasm. The result is a "dry orgasm," which is the sensation of pleasure but without any semen coming out of the penis.

What are the symptoms of infertility?

Men usually don't have any symptoms of infertility unless they have dry orgasms. Most men don't realize that they are infertile until they have a semen analysis and discover that their semen quality is low. If you are curious about your own fertility, you should get it tested.

How can a man's fertility be tested?

A man's fertility can be tested with a semen analysis: A sample of semen is collected very soon after ejaculation and is put under a microscope. The semen analysis usually includes at least three "scores" that make up semen quality:

- The sperm count is the number of sperm present in the semen. A normal sperm count is at least 20 million sperm per milliliter of semen (five milliliters equals a teaspoon, and most men ejaculate two to five milliliters of semen, so one milliliter is a few drops of liquid).
- The motility is the percentage of sperm that are actively swimming around. At least 50 percent of the sperm should be motile.
- The morphology is the shape of the sperm. Sperm often have funny shapes; for example the heads are round instead of oval, or the sperm has two tails. The morphology is considered normal if at least 30 percent of the sperm have an ideal shape. Some labs use the Kruger scoring system which is stricter, so that a sample would be called normal if only 14 percent of sperm cells have an ideal shape.

When does cancer-related infertility start and how long does it last?

Generally, infertility is most likely to happen before cancer treatment and just after treatment is finished. Just because one year's semen analysis says you are infertile, the results may change over the next month or year. If a man is going to recover sperm production, his semen analysis will usually improve within one to three years after he finishes cancer treatment, although some men have had improvements as many as nine years later.

What are some options for a survivor whose fertility was or will be affected by cancer or treatment for cancer?

Sperm Banking

Before beginning chemotherapy or radiation, you produce a semen sample at a medical laboratory or sperm bank.

A semen analysis is done. As long as the sample contains some live sperm cells, it can be frozen and stored for future use in infertility treatment.

Once frozen, samples can be kept for at least 10 to 15 years, probably longer, without further damage.

Cost: Most health insurance plans do not cover the cost of storing frozen semen although many do pay for the semen analysis. Many sperm banks have monthly payment plans to make banking more affordable for cancer survivors.

Who can do it: Men who have reached puberty, even boys as young as 12 or 13, can bank sperm as long as the semen contains enough live and healthy sperm.

Where to bank sperm: Most large cities have sperm banks that you can find listed in the yellow pages. A member of your health care team may be able to give you a referral. If a sperm bank is not located near your home, you can find sperm banks on the Internet. Ask a member of your health care team if the sperm bank is reputable.

Some sperm banks provide express mail kits to men who want to collect their semen at home. Some work with a local laboratory to process your sample and send it to the bank.

In Vitro Fertilization - Intracytoplasmic Sperm Injection (IVF-ICSI)

This treatment became available in 1992.

The woman who will carry the child must undergo hormone shots for several weeks to stimulate her ovaries to ripen more than one or two eggs.

Her eggs are "harvested" in minor outpatient surgery.

The eggs are cleaned in the laboratory and stored in individual dishes, ready for fertilization.

The embryologist uses a special microscope to choose a healthy-looking sperm and injects it into an egg. If all goes well, several embryos can be created.

One, two or, occasionally, three embryos can be placed into the uterus of the female partner in the hopes that they will implant and start a pregnancy.

Cost: IVF-ICSI is expensive and involves some medical risks for the woman. But it is also very successful, especially if the woman has normal fertility and is younger than 35.
Who can do it: Since only a few sperm are needed, IVF-ICSI is a good option for men who have poor semen quality or have sperm with poor motility.

Intrauterine Insemination (IUI)

This option is for men with semen quality that is closer to normal.
A man's semen sample is purified and concentrated to contain as many active sperm as possible.
In a doctor's office, the sample is put in a thin catheter (tube) and slipped directly through the woman's cervix into her uterus, giving the sperm a head start on fertilizing the egg.
The procedure is done at a woman's midcycle, her fertile time of month. Sometimes the woman is given extra hormones to ripen more than one egg, but not in the high doses used in IVF.

Donor Insemination

A man donates his sperm. The survivor may choose someone he knows or can use donor sperm from a sperm bank.
The donor semen is used as in IUI to create a pregnancy

Adoption

Adoption is accepting legal responsibility for an orphaned child. Contact an adoption agency for more information.
Cost: The process can be expensive ($5,000 to $40,000) and may take a long time.
Who can do it: Adoption agencies have screening processes for anyone who wants to adopt. Discuss with your health care team any documentation you might need to confirm that you are healthy and able to care for a child.

Resources

Fertile Hope

www.fertilehope.org <http://www.fertilehope.org/>
Email: Send email through the Web site.
Phone: 1-888-994-HOPE (1-888-994-4673)
Fertile Hope has information and brochures that describe parenthood options for both men and women. The Web site briefly explains the procedure, success rate and cost of each option and explains when they can be used (for example, before, during, or after treatment). The site includes a list of questions to ask your health care team and lists of doctors who specialize in fertility options. The organization also provides financial assistance for certain procedures.

RESOLVE: The National Infertility Association

www.resolve.org <http://www.resolve.org/>
Email: info@resolve.org <mailto:info@resolve.org>
Phone: 1-888-623-0744 Trained peer staff members answer calls Monday-Friday, 9:00 a.m. to noon and 1:00 p.m.-4:00 p.m. (EST). They are also available Monday evenings from 7:00 p.m. to 11:00 p.m. (EST).
The RESOLVE Web site provides information on infertility and treatment options.

Information on the emotional effects of infertility is included, as well as contact information for support services. Alternatives such as adoption and living without children are also discussed. From the site, you can order publications, post a message to the bulletin board or participate in online chats. Contact information for local RESOLVE chapters is also included.

Seattle Reproductive Medicine(private practice)
1505 Westlake Ave N
Suite 400
Seattle, WA 98109
(206) 301-5000
www.seattlefertility.com

Local Resources

1. Reproductive and Sexual Medicine Clinic, UWMC (206) 598-7792
2. Richard Berger, MD, Urologist, Urology Clinic, UWMC (206) 598-4294
3. Claire Yang, MD, Urologist, Urology Clinic, UWMC (206) 598-4294
4. Ivan Rothman, ARNP, Urology Clinic, UWMC, (206) 598-4294
5. Keith Van Meter, ARNP, Prostate Center UWMC, (206) 598-4528

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