



PATIENT & CAREGIVER EDUCATION

Building Your Family After Cancer Treatment: Information for Men

This information describes options that men have for building a family after cancer treatment is completed.

Male Reproduction

The male reproductive system includes a number of structures (see Figure 1).

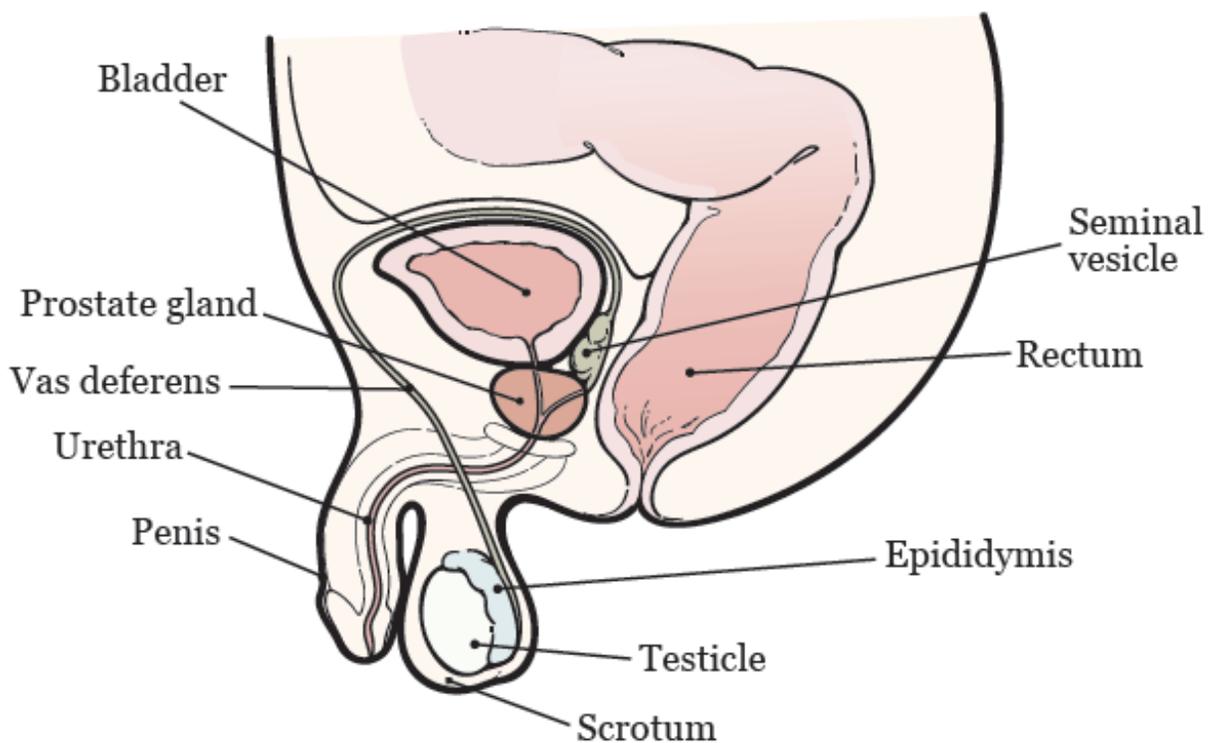


Figure 1. Male reproductive system

Once puberty begins, hormones from a gland in the brain (the pituitary gland) stimulate the testes (testicles) to make sperm. It takes about 3 months for sperm to mature. Mature sperm are stored in the epididymis. When a male is sexually excited, nerves stimulate muscles to push the sperm from the epididymis through the vas deferens. The sperm mix with fluids from the seminal vesicles and prostate gland to form semen. Muscles at the opening of the bladder close, and the semen comes out of the penis through the urethra. This is called ejaculation.

If ejaculation during sex with a female partner occurs around the time of the month when she ovulates (releases a mature egg from the ovary), a single sperm may enter and fertilize the egg. If the fertilized egg begins to divide, an embryo is formed which can implant in the woman's uterus (womb). The cells continue to divide, forming a fetus that grows and develops during the 9 months of pregnancy.

Effects of Cancer Treatment on Fertility

Cancer treatments may cause fertility problems affecting your ability to father a biologic child, including:

- Inability to produce sperm.
- Damage to nerves and blood vessels needed for erection and ejaculation.
- Inability to produce hormones that stimulate sperm

production.

Not all cancer treatments cause fertility problems. It depends on:

- Your fertility before treatment.
- The type of surgery you had.
- The type and dose of chemotherapy you received.
- The area of your body treated with radiation and the dose of radiation you received.

Fertility problems from cancer treatment may be temporary or permanent. Some men regain the ability to produce sperm after treatment. This generally takes 1 to 3 years, but can sometimes take longer. Some men have only partial recovery, with low sperm counts, and some men never recover sperm production.

Because of the many factors that affect fertility, it's hard to predict how any one person will be affected by treatment. We can't know for sure who will regain fertility after treatment is completed and who won't.

Common Questions about Fertility and Family Building After Cancer Treatment

How long must I wait after treatment to try to father a child?

The length of time you need to wait depends on your diagnosis and the treatment you received. If you have had chemotherapy or

radiation, we generally suggest waiting at least 1 year after treatment is finished before trying to have a child. This allows time for sperm that may have been damaged from treatment to be cleared from your body. However, some people may not need to wait this long, while others may need to wait longer. Check with your healthcare provider to find out how long they recommend you wait.

How will I know if I'm fertile after treatment?

You can have a semen analysis done at a sperm bank to see if you're producing sperm and to analyze your sperm count and motility (ability for your sperm to swim). Wait at least 1 year after completing treatment before having a semen analysis so that your testes have time to recover. If they don't find sperm in the specimen, remember that it can take a number of years for some men to start producing sperm again. You can repeat the semen analysis 6 to 12 months later. If you want a more in-depth evaluation, ask your doctor to refer you to a reproductive urologist.

Will a child conceived after my cancer treatment be healthy?

There is no evidence that children conceived after cancer treatment are at an increased risk for birth defects or other health problems. However, it's important to use birth control during treatment to ensure you don't conceive with sperm that may have been damaged from exposure to chemotherapy or

radiation. This damage might affect the health of the child. We also recommend that you use birth control for 1 year after completing chemotherapy and radiation therapy to ensure all damaged sperm have been cleared from your body.

Some cancers are hereditary, or passed down from parents to children. Ask your doctor or nurse if you have a hereditary cancer. If you do, you can meet with a genetics counselor to learn how this may affect the health of a child.

If you have a specific genetic mutation that can be passed on to a child, you may want to consider preimplantation genetic testing (PGT). PGT is a method of testing embryos that have been created by in vitro fertilization for the mutation you have. If you want, you can then choose only those embryos that don't have the genetic mutation when you're ready to attempt pregnancy.

What if I have a low sperm count?

Some men recover sperm production after cancer treatment but have a low sperm count and may not be able to conceive naturally. However, you may still be able to have a biologic child through in vitro fertilization (IVF). There are several steps involved in IVF, including:

- **Ovarian stimulation:** Your female partner takes hormone injections (shots) for about 10 days to stimulate a group of eggs in her ovaries to mature.

- **Egg retrieval:** While your partner is asleep under anesthesia (medication to make her sleepy), a very thin needle is passed through the wall of her vagina to remove the mature eggs from her ovaries. This procedure takes 10 to 20 minutes.
- **Fertilization:** The eggs are fertilized with your sperm in a laboratory. If your sperm count is low, they will inject a sperm into each egg (intracytoplasmic sperm injection, or ICSI). The fertilized eggs are kept in the laboratory for 3 to 5 days to make sure they start to divide and form healthy embryos.
- **Embryo transfer:** One or 2 embryos are placed in your partner's uterus to attempt pregnancy. The others are frozen and stored for possible use in the future.

What if I am no longer fertile, but banked sperm before treatment?

To use the sperm you froze before treatment, you and your partner will need to work with a reproductive endocrinologist (doctor who specializes in infertility). The method used to fertilize your female partner's eggs will be based on the quality of the specimens you were able to freeze before treatment.

- **Intra-uterine insemination (IUI or artificial insemination):** One or 2 vials of your sperm are thawed and drawn up into a thin, soft catheter. This is placed in your female partner's uterus and the sperm are released. This is done around the time she ovulates (releases a mature egg).

- It takes most women 3 to 6 attempts at IUI before they are successful, so most patients who sperm banked will not have enough sperm to use this method. However, it may be a good option for you if your partner is young and has no fertility problems, and if you have many vials of sperm with high sperm counts and good motility.
- In vitro fertilization (IVF): This method is used by most people who use their thawed sperm. There are several steps involved:
 - Ovarian stimulation: Your female partner takes hormone injections for about 10 days to stimulate a group of eggs in her ovaries to mature.
 - Egg retrieval: While your partner is asleep under anesthesia (medication to make her sleepy), a very thin needle is passed through the wall of her vagina to remove the mature eggs from her ovaries. This procedure takes 10 to 20 minutes.
 - Fertilization: The eggs are fertilized with your sperm in a laboratory. If your sperm count is low, they will inject a sperm into each egg. The fertilized eggs are kept in the laboratory for 3 to 5 days to make sure they start to divide and form healthy embryos.
 - Embryo transfer: One or 2 embryos are placed in your partner's uterus to attempt pregnancy. The others are frozen and stored to use in the future.

What if I am no longer fertile and didn't sperm bank before treatment?

Even when no sperm are found in a semen sample, some people produce small amounts of sperm after cancer treatment. To try to get sperm to attempt pregnancy, you would need to see a reproductive urologist and undergo a procedure called testicular sperm extraction (TESE). This is an outpatient procedure done under anesthesia while you're asleep. A small incision (surgical cut) is made in your scrotum. Your doctor removes pieces of tissue from your testes. These are examined to search for sperm. If sperm are found, they can be used to attempt to fertilize your female partner's eggs. For more information about this procedure, read the resource *Sperm Collection by Testicular Sperm Extraction (TESE)* (www.mskcc.org/cancer-care/patient-education/sperm-collection-testicular-sperm-extraction-tese).

If you would like to learn more about this procedure, ask your doctor or nurse to refer you to a reproductive urologist. If you aren't interested in considering this, see below to learn about other options to build a family.

What if I have retrograde (dry) ejaculation?

Some cancer treatments cause injury to or removal of the nerves and muscles that control ejaculation. With retrograde ejaculation, the semen passes into the bladder instead of coming out through the penis. If you have retrograde ejaculation, but are still producing sperm, there are methods to get sperm to

attempt pregnancy, including:

- Taking medication to tighten the muscles at the opening of the bladder. This allows the semen to pass forward out through the penis instead of into the bladder.
- Collecting a sample of urine after you stimulate yourself to ejaculate. This is done at a sperm bank, where they can remove the sperm from the urine.

If you're interested in either of these options, ask your doctor for a referral to a reproductive urologist.

What if I have erectile dysfunction?

Some cancer treatments cause injury to or removal of the nerves and blood vessels that control erection. If you're still producing sperm, but your penis isn't able to become firm enough to enter your female partner's vagina, the sperm cannot fertilize her eggs. Several treatments can help with erections, including medications and injections. If you're interested in trying these, ask your doctor for a referral to a urologist who specializes in erectile dysfunction.

What are my other options to build a family?

Some men aren't able to sperm bank before treatment or aren't successful in having a child using their frozen sperm. Other ways to build a family are using donor sperm or adoption.

Donor sperm

Using donor sperm involves using sperm from another man to impregnate your female partner. Young, healthy men provide their sperm to a sperm bank for donation. Most donors are anonymous, but some are willing to have the child contact them when they reach adulthood. You can select a donor based on various characteristics and traits that are shared on the sperm bank website.

You may also have a relative or friend who is willing to donate sperm for you. While this may be a good option for you, even with the best of intentions, you may have problems if expectations aren't clearly defined. Sometimes, a relative or friend who wants to help will make an offer without understanding all that's involved. No matter how well you know the person, your donor should have psychological and medical screening. You should also both speak with lawyers who specialize in reproductive law.

- The first step is for you and your female partner to see a reproductive endocrinologist. They can recommend sperm banks where you can get sperm. Once you choose a donor, the frozen sperm will be sent to your reproductive endocrinologist.
- Intra-uterine insemination (IUI or artificial insemination) is the most commonly used method for using donor sperm to get pregnant. It's planned for around the time your female

partner ovulates. One or 2 vials of sperm are thawed and drawn up into a thin, soft catheter (flexible tube). This is placed in your partner's uterus and the sperm are released. It takes most women 3 to 6 attempts at IUI before they get pregnant.

Adoption

Adoption is another way of building your family after cancer treatment. Adoptions can be domestic (the child is born in the United States) or international (the child is born and lives outside of the United States). The cost of adopting a newborn child in the United States is around \$40,000 and can take 1 to 4 years. International adoptions are highly regulated, and policies vary by country and often change. Some countries don't allow people who have been treated for cancer to adopt.

There are several things to consider when pursuing adoption. It's important to know what you're comfortable with before you begin the process. When making your decision, ask yourself the following:

- Do you want to adopt a newborn baby, or are you comfortable adopting an older child?
- Do you want to adopt a child of the same race and ethnicity as you, or are you comfortable adopting outside your race?
- Would you consider adopting a child who has special health needs?

Most adoptions are now open or semi-open, allowing some contact between the birth parents, the adoptive parents, and the child. Everyone involved agrees on the type and amount of contact.

Arranging an adoption

Adoptions can be arranged by adoption agencies or lawyers. Agencies may be public or private. An agency caseworker is often involved in matching the birth parents with the adoptive parents. The match is based on what the birth parents are looking for in adoptive parents and in the characteristics of the child the adoptive parents are hoping to adopt.

- Public agencies are part of the state Department of Social Services. They usually work with children who have been taken away from their birth parents due to alleged abuse or Private agencies may handle domestic adoptions, international adoptions, or both. Each agency has its own standards about who they will accept as adoptive parents. Children adopted through private agencies are usually younger than children adopted through public agencies. A private domestic adoption may be the best option if you want to adopt a newborn child.
- Adoption lawyers can arrange private adoptions. Adoption laws vary by state, so it's important to work with a lawyer who specializes in adoption and is licensed in the state in which you want to adopt.

To find an adoption agency, go to the National Foster Care and Adoption Directory website at www.childwelfare.gov/nfcad/. Select your state and the type of agency you're looking for (such as public, private domestic, or private intercountry).

To find agencies that focus on international adoption, search the Intercountry Adoption website at travel.state.gov/content/travel/en/Intercountry-Adoption.html.

To find an adoption lawyer, search the American Academy of Adoption and Assisted Reproduction Attorneys website at www.adoptionart.org.

Home study

Before you can adopt, a social worker will do a home study to assess your ability to care for a child. Your agency or lawyer will tell you the best time to schedule the home study. The social worker will ask you things that may seem very personal. This is to make sure you understand what is involved and are ready to proceed with an adoption. The social worker will need to confirm you're a United States citizen or legal permanent resident as this is required to adopt in this country. The social worker will also do a medical assessment. Your history of cancer doesn't affect your ability to adopt a child, but you may need a note from your doctor with information about your diagnosis and treatment. You will also need a statement from your doctor that you're healthy, able to be a parent, and are expected to live long enough

to raise a child (up until they turn 16 years old). Once the child is placed in your care, the social worker will stay in contact to help with any issues that may arise.

Adoption resources

The following resources can help you learn more about adoption:

- Adoptive Parents Committee: www.adoptiveparents.org
- Adoption.com: www.adoption.com
- Adoption.org: www.adoption.org
- Adoptive Families: www.adoptivefamilies.com
- Building Your Family: www.buildingyourfamily.com
- Child Welfare Information Gateway: www.childwelfare.gov

MSK Resources

If you would like additional information from one of our Fertility Nurse Specialists, or if you would like to be evaluated by our reproductive urologist, ask your doctor or nurse for a referral.

MSK Fertility website

www.mskcc.org/cancer-care/treatments/symptom-management/sexual-health-fertility/fertility

Fertility Options for Men Before and After Cancer Treatment (videos)

www.mskcc.org/cancer-care/survivorship/videos-

If you have any questions, contact a member of your healthcare team directly. If you're a patient at MSK and you need to reach a provider after 5:00 PM, during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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