Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Building Your Family After Cancer Treatment: For People Born With Testicles

This information explains your reproductive system and how cancer treatment may affect your fertility (your ability to have biological children). It also explains your options for building a family after cancer treatment.

About your reproductive system

Your reproductive system is made up of internal (inside your body) and external (outside of your body) parts. These parts work together to help you urinate (pee), have sex, and make children.

Your reproductive system is made up of the following parts (see Figure 1):

- **Penis**: Your urine (pee), sperm (reproductive cells), and semen (the protective fluid around sperm) leave your body through your penis.
- **Testicles (testes)**: Your testicles sit below your penis. They make and store sperm.
- **Scrotum**: Your scrotum is the pouch of skin holding your testicles.
- **Epididymis** (eh-pih-DIH-dih-mis): Your epididymis are tubes that carry sperm from your testicles to your vas deferens. You have 2 epididymides: 1 near your left testicle and 1 near your right testicle.
- **Vas deferens**: Your vas deferens are tubes that carry sperm from your epididymides to your urethra.
- **Urethra**: Your urethra is the tube that carries urine and sperm out of your body.

- **Prostate**: Your prostate is a small, firm gland about the size of a walnut. It's next to your rectum and directly below your bladder. It surrounds your urethra, which is the tube that carries urine out of your body. Your prostate works with other glands in your body to make and discharge semen.
- **Seminal vesicles**: Your seminal vesicles are small glands near your prostate that make the fluid in semen. You have 2 seminal vesicles: 1 on the left side of your prostate and 1 on the right side of your prostate.

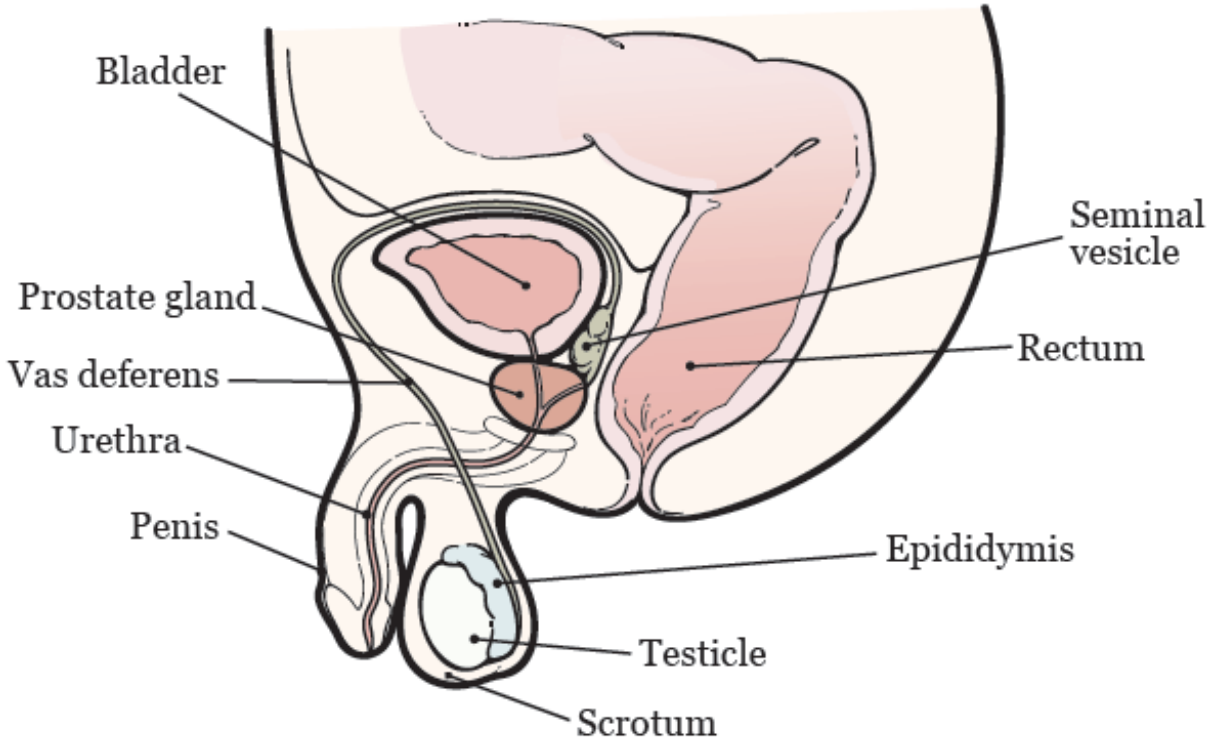


Figure 1. Your reproductive system

Once you go through puberty, your hormones help your testes (testicles) to make sperm. It takes about 3 months for sperm to mature. Mature sperm are stored in the epididymis.

When you're sexually excited, nerves stimulate muscles to push the sperm from your epididymis through your vas deferens. Your sperm mixes with fluids from your seminal vesicles and prostate gland to form semen. Muscles at the opening of your bladder close, and your semen comes out of your penis through your urethra. This is called ejaculation.

If you ejaculate (when semen comes out of your penis after reaching orgasm) during vaginal sex with someone who is ovulating, a single sperm may go into their egg. If sperm goes into their egg, it may form an embryo (early stages of a baby). The embryo passes into their uterus, where it grows into a baby.

How cancer treatment may affect your fertility

Some cancer treatments may affect your fertility. Since there are many things that can affect fertility, it’s hard to know how you may be affected by your treatment.

We cannot know for sure if you will be able to have biological children after treatment or not. If you have questions about how your treatment may affect your fertility, talk with your healthcare provider.

Cancer treatments may:

- Affect your ability to make sperm.
- Damage the nerves and blood vessels you need to have an erection and ejaculate.
- Affect your ability to make hormones needed to make sperm.

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 people are never able to make sperm while others may be able to about 1 to 3 years after treatment. Sometimes people can make sperm again

but may have low sperm counts.

Common questions about fertility and family building after cancer treatment

How long should I wait after treatment to try to have a child?

The length of time you need to wait depends on the type of cancer you have and the treatment you received. We recommend waiting 1 year after chemotherapy or radiation before trying to have a child. This gives your body time to clear out any sperm that may have been damaged during treatment.

If you had a newer treatment (such as targeted or biologic therapy), you may need to wait longer before you start to try to have a child. Talk with your healthcare provider about your treatment and how long you need to wait.

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

You can have a semen analysis done at least 1 year after your cancer treatment is complete. A semen analysis is a test to check if you’re making sperm. If you’re making sperm, it tests your sperm count (how much sperm you’re making). It also tests your sperm motility (ability for your sperm to swim).

If your semen analysis shows that you’re not making sperm or you have a low sperm count, wait 1 year and test it again. It can take up to 5 years to fully recover after cancer treatment.

Will my child be healthy?

After your cancer treatment, your healthcare provider will recommend you wait a certain amount of time before you try to have children. This is to give your body time to clear out any damaged sperm. If you wait, your child will not have an increased risk for birth defects or other health problems. If you do not wait, your child may have an increased risk for birth defects or other

health problems.

What if I have a hereditary cancer?

Some cancers are hereditary (passed down from parents to children). Ask your healthcare provider if you have a hereditary cancer. If you do, you can meet with a genetics counselor to learn how this may affect your child's health. If you have a genetic mutation that can be passed on to a child, you may want to think about genetic testing. Talk to your healthcare provider for more information.

Talk with your healthcare provider about in-vitro fertilization if you have a hereditary genetic mutation and do not want to pass this on to your future children.

What if I have a low sperm count?

You may be able to make sperm again after cancer treatment, but you may have a low sperm count. This may affect your fertility. You may still be able to have a biological child through assisted reproductive technology. Assisted reproductive technology are procedures and treatments to help with infertility. Talk with a reproductive endocrinologist (a doctor that specializes in fertility) to learn more about your family building options.

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

You will need to work with a reproductive endocrinologist to use the sperm you froze before treatment. How you use your frozen sperm will depend on the quality and quantity of the sperm. Your options may include:

- **Intra-uterine insemination (IUI or artificial insemination)**: This is when your sperm is thawed and placed in your partner's or a surrogate's (a person that carries a pregnancy for you) uterus during the time of ovulation.
- **In vitro fertilization (IVF)**: This is when eggs are removed from ovaries and mixed with your sperm in a lab to make embryos. The embryo(s) are placed in the uterus to attempt pregnancy.

What if I am no longer fertile and did not freeze my sperm before treatment?

Even if we do not find sperm in your sample, you may still make small amounts of sperm after treatment. You can have a procedure done to try to collect sperm directly from your testes. This is called a testicular sperm extraction (TESE).

During a TESE, your healthcare provider will make a very small incision (surgical cut) in your scrotum (the pouch of skin holding your testes). They will examine your testes using a tiny microscope and remove small pieces of tissue from your testes. They will look for sperm in the tissue. If sperm is found, you can use it to try to get pregnant. Then your healthcare provider will close the incision with sutures (stitches). You will get general anesthesia (medication to make you sleepy) to put you to sleep during the procedure.

For more information, ask your healthcare provider for a referral for a reproductive urologist. You can also read *Sperm Collection by Testicular Sperm Extraction (TESE)* (www.mskcc.org/cancer-care/patient-education/sperm-collection-testicular-sperm-extraction-tese).

What if I have retrograde (dry) ejaculation?

Some cancer treatments may affect 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 making sperm, there are ways to get your sperm, including:

- Taking medication to tighten the muscles at the opening of the bladder. This allows the semen to pass 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 healthcare provider for a referral to a reproductive urologist.

What if I have erectile dysfunction?

Erectile dysfunction (ED) is when you have trouble getting or keeping an erection. Some cancer treatments may affect the nerves and blood vessels that control erection.

Several treatments can help with erections, including medications and injections (shots). To learn more about these treatments, ask your healthcare provider for a referral for a urologist who specializes in ED.

What are my other options to build a family?

Some people are not able to bank sperm or are not able to get pregnant 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 person to get pregnant. You can choose a donor based on the characteristics and traits that are important to you. You and your partner will need to see a reproductive endocrinologist to discuss your options for family building.

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 have different policies depending on the country. Many agencies require that you don’t have cancer for a period of time before adopting a child.

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 the characteristics of the child you’re 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. 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. 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

Adoption resources

The following resources can help you learn more about adoption:

- Adoptive Parents Committee: wwww.adoptiveparents.org
- Adoption.com: www.adoption.com
- Adoption.org: www.adoption.org
- Adoptive Families: www.adoptivefamilies.com
- Child Welfare Information Gateway: www.childwelfare.gov
- Intercountry Adoption: travel.state.gov/content/travel/en/Intercountry-Adoption.html

- American Academy of Adoption and Assisted Reproduction Attorneys: www.adoptionart.org

MSK resources

MSK's Sexual and Reproductive Medicine Program
www.mskcc.org/cancer-care/diagnosis-treatment/symptom-management/sexual-health-fertility/health/male-medicine
646-888-6024
This program helps you manage issues related to your cancer care and sexual health, including erectile dysfunction. Call for more information or to make an appointment.

MSK's Fertility Program
www.mskcc.org/cancer-care/diagnosis-treatment/symptom-management/sexual-health-fertility/fertility
This program helps you manage issues related to fertility and your cancer treatment. Ask your healthcare provider for a referral to talk with a fertility nurse specialist.

If you would like to be evaluated by a reproductive urologist, ask your healthcare provider for a referral.

> If you have any questions, contact a member of your care team directly. If you're a patient at MSK and you need to reach a provider after 5 p.m., 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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