



PATIENT & CAREGIVER EDUCATION

Building Your Family After Cancer Treatment: Information for Women

This information explains options that women have for building a family after cancer treatment is completed.

Female Reproduction

The female reproductive system includes many parts that work together to allow you to become pregnant and carry a child (see Figure 1).

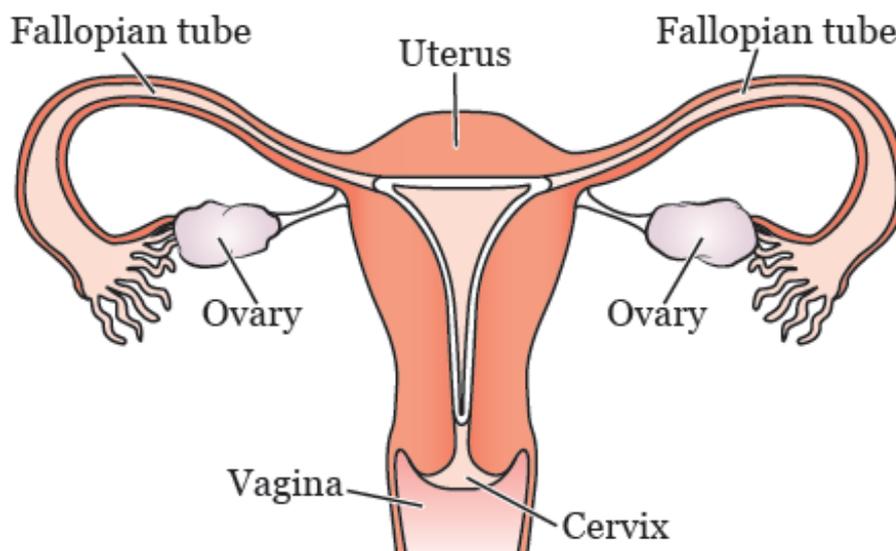


Figure 1. Female reproductive system

Girls are born with about 1 million eggs. After puberty, hormones from a gland in the brain (the pituitary gland) stimulate eggs in the ovaries to mature. Each month, 1 mature

egg is released into the fallopian tube. This is called ovulation. If the egg is fertilized by sperm and begins to divide, it may form an embryo. The embryo passes into your uterus, where it may implant, resulting in pregnancy.

As a woman ages, she loses eggs. With fewer eggs, it's harder to get pregnant and monthly periods may become irregular. For most women in the United States, at age 51 there are so few eggs (less than 1,000) that monthly menstrual periods stop and menopause begins. Five to 10 years before menopause, women generally become infertile, losing the ability to conceive naturally.

Effects of Cancer Treatment on Fertility

Cancer treatments may cause fertility problems affecting your ability to become pregnant and have a biologic child, including:

- Some chemotherapy medications destroy eggs. This may lead to infertility after treatment.
 - The number of eggs you lose depends on the type of treatment you had and your age when you received treatment. Older women have fewer eggs, so the loss of eggs is more likely to affect their fertility.
 - This loss of eggs in the ovaries from chemotherapy can “age” the ovaries, reducing the chance of pregnancy in the same way that natural aging does.
 - Some women lose so many eggs that they become infertile and begin menopause immediately after

treatment.

- Some women still have eggs remaining after treatment and continue to have monthly menstrual periods after treatment. However, because of the loss of eggs, they may develop infertility and menopause at a young age. This narrows the window of time that a woman can become pregnant.
- Some women continue to have monthly menstrual periods with no impact on their fertility.
- Radiation therapy to the pelvis or whole abdomen (belly) destroys eggs in a similar way to chemotherapy. Radiation may also damage the uterus, causing fibrosis (scarring).
 - Women who receive high doses of radiation to the uterus will not be able to become pregnant.
 - Women who receive lower doses of radiation to the uterus may become pregnant, but their uterus may not be able to fully expand as the fetus grows. These women are more likely to have a miscarriage (when a pregnancy ends on its own) or premature labor. It's recommended that they see a maternal fetal medicine specialist (a doctor who specializes in high risk pregnancies).
- Surgery in the pelvis may remove or damage reproductive structures, such as your ovaries and uterus. Depending on the extent of surgery, this can affect a woman's ability to become pregnant or carry a pregnancy.

- Surgery or radiation therapy to the brain may affect the functioning of the pituitary gland, which releases hormones that stimulate egg maturation and ovulation. This doesn't damage the eggs in your ovaries. Medications that replace these hormones and can help you become pregnant.

Because of the many factors that can affect fertility, it's hard to know how you may be affected by your treatment. We can't know for sure who will still be able to get pregnant after treatment is finished and who will not. We also can't know for sure how long a woman will be fertile after treatment. If you have questions about your risk of infertility based on the treatment you have received, talk with your oncologist (cancer doctor).

How to Evaluate Your Fertility after Treatment

Specially trained gynecologists called reproductive endocrinologists can evaluate your fertility. We generally recommend that you wait at least 1 year after completing cancer treatment to give your ovaries time to recover from the effects of treatment.

Your reproductive endocrinologist (fertility specialist) will do many tests to evaluate your ovarian reserve, a term that describes the number and quality of your eggs. The tests may include:

- A transvaginal ultrasound, in which a thin wand is placed in

your vagina. Sound waves from the wand create pictures of your ovaries and uterus. With this test, your doctor can examine your ovaries and count the number of large growing follicles in your ovaries. This is called the antral follicle count. This helps to see if you have enough eggs to get pregnant naturally or with some type of fertility treatment.

- If you've never had a gynecologic exam or vaginal sex, your reproductive endocrinologist may be able to perform the ultrasound using a wand placed on your abdomen rather than in your vagina.
- Blood tests to measure the levels of hormones related to fertility, including antimullerian hormone (AMH). The more eggs you have, the higher your AMH level.
- A semen analysis from your male partner, if you have one. This is a test to see if your partner has enough healthy sperm to fertilize your eggs.
- Other tests may be recommended by your doctor as well.

Your reproductive endocrinologist will review the results of the evaluation with you and recommend the best options for building your family.

Pregnancy After Cancer Treatment

Most women are advised not to get pregnant right after treatment. There are several reasons for this:

- If you received chemotherapy or radiation to the pelvic area, some of your maturing eggs may have been damaged from treatment. It takes about 1 year to clear these from your ovaries.
- Your body needs time to recover from treatment so it's able to handle pregnancy.
- If you become pregnant during the time when you're most at risk for an early recurrence (cancer coming back) or relapse of your disease, your doctors may not be able to monitor you with certain tests or scans.

Most women are advised to wait at least 1 to 3 years after cancer treatment is over before trying to get pregnant. Some women won't need to wait that long, but others will need to wait longer.

Although many women will have no problems with pregnancy after cancer treatment, some women will be in a high-risk category because of possible late effects from treatment.

- Some types of chemotherapy and radiation therapy can affect the function of your heart, lungs, kidneys, or liver. Pregnancy places extra demands on your body that could put your health at risk.
- Some treatments can affect your body's ability to make certain hormones. You may need to take replacement hormones to get pregnant and carry a pregnancy.
- If you had radiation therapy to your pelvis, you may have

scarring in your uterus. Depending on how much radiation the uterus received, you may not be able to carry a pregnancy or you may be at risk for miscarriage or premature labor.

Talk to your oncologist before you try to get pregnant. Ask if the timing is right for you and if there are any medical reasons that would make it unsafe for you to become pregnant. Ask if you should see an obstetrician (a doctor who specializes in pregnancy and childbirth) who specializes in high-risk pregnancies. These doctors are called maternal fetal medicine (MFM) specialists. If your oncologist recommends this, you may need to consult an MFM specialist before you try to get pregnant.

If you aren't ready to start a family yet, but may want to have children in the future, ask your doctor or nurse if you're at risk for early menopause. If you're at risk, you may be interested in information about freezing eggs or embryos for future use. Ask your doctor or nurse for the resource *Fertility Evaluation and Fertility Preservation: Options for Women Who Have Completed Cancer Treatment* (www.mskcc.org/pe/fertility_women_completed_treatment).

Options for Building a Family

Your options for building a family may include:

- Natural conception
- Ovarian stimulation, with intrauterine insemination or in

vitro fertilization

- Using your own frozen eggs or embryos
- Using donor eggs or embryos
- Surrogacy with a gestational carrier
- Adoption

Each of these options is described below. At the end of this resource, you will find a list of resources to learn more.

Natural conception

Some women will be able to get pregnant without medical help. If you try to get pregnant and aren't able to after 3 to 6 months, make an appointment with a reproductive endocrinologist for an evaluation. Based on the results of your evaluation, your reproductive endocrinologist will tell you if you will be able to conceive naturally or if you should consider other options for having a child.

Ovarian stimulation

Your fertility evaluation may show that you have enough eggs to become pregnant but need medical help. If this is the case, your doctor may recommend stimulating your ovaries with hormones (ovarian stimulation).

On or around the second day of your period, you start giving yourself daily injections (shots) of hormones for about 10 days. This will stimulate a group of eggs in your ovaries to mature. During this time, you will see your doctor almost every other

day for blood tests and ultrasounds. There are 2 ways to proceed once your eggs are mature.

- Intra-uterine insemination (IUI or artificial insemination): Your doctor collects a sample of semen from your partner or a donor and places it in your uterus around the time you ovulate to increase the chance that your egg will become fertilized.
- In vitro fertilization (IVF): Your eggs are removed and fertilized in a laboratory. There are several steps to this process:
 - Egg retrieval: While you're under anesthesia (medication to make you sleep), a very thin needle is passed through the wall of your vagina to remove the mature eggs. The procedure takes about 20 minutes and you will go home about 1 hour after the procedure.
 - Fertilization: Your eggs are fertilized with sperm from your partner or a donor. Not all eggs will fertilize, and not all fertilized eggs will develop into embryos. Therefore, the more eggs you have, the greater your chance of success.
 - Embryo transfer: One or more embryos are placed into your uterus using a very thin catheter (flexible tube) that is passed through your vagina and cervix. This is usually done in an exam room while you're awake. You and your doctor will decide how many embryos to transfer. The remaining embryos can be frozen and stored for future

use.

Using your own frozen eggs or embryos

If you can't become pregnant naturally or with ovarian stimulation, and you froze eggs or embryos before treatment, you may be able to use these to attempt pregnancy. There are several steps to this process:

- You will take hormones for 2 to 3 weeks to get the lining of your uterus ready for your embryo to implant. This process is called priming.
- You and your doctor will decide how many embryos to transfer and that number of embryos will be thawed. If you froze eggs, these will be thawed and fertilized with sperm from your partner or a donor to create embryos.
- One or more embryos will be transferred to your uterus using a very thin catheter that will be passed through your vagina and cervix. This is usually done in an exam room while you're awake.
- If an embryo implants, you will continue to take hormones for several months to support the pregnancy.

Using donor eggs

If you can't become pregnant naturally or with ovarian stimulation, and you didn't freeze eggs or embryos before treatment, you may be able to use eggs from a donor. The child won't have your genes, but you would experience pregnancy and childbirth.

Eggs are usually donated by young women who want to help other women build their families. Donors should be carefully screened to ensure they are medically and emotionally healthy. Most donors are anonymous, but some may allow a child to contact them when they reach adulthood. Donors may be willing to have contact with you during the process.

Finding donor eggs

Your fertility center may have an egg donor program or can recommend an egg donor agency. Reproductive lawyers with experience in this area can also recommend egg donor agencies. The cost for donor eggs is generally about \$35,000, including medical expenses and compensation of the donor.

Sometimes, 2 people share the eggs of a single donor to lower the costs. Some agencies now have frozen eggs available for donation.

You may have a relative or friend who is willing to donate eggs 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.

What is involved

Once you choose a donor and she has been screened, you will need to finalize the financial and legal arrangements. Then, your reproductive endocrinologist will plan the timing of the egg collection. There are several steps to this process:

- To prime the lining of your uterus for implantation of the embryo, you will begin to take hormones a few weeks before the process begins.
- The donor will give herself daily hormone injections for about 10 days to stimulate a group of eggs in her ovaries to mature. During that time, she will be closely monitored by her doctor.
- When the donor's eggs are mature, they will be removed (this is called egg retrieval). This is done with anesthesia, so she will be asleep. The eggs will be collected using a very thin needle passed through her vagina. The procedure takes about 20 minutes and she will go home about 1 hour after the procedure.
- The eggs will be fertilized with sperm from your partner or a donor. Some of these fertilized eggs will start to divide and form embryos.
- After 3-5 days, 1 or more embryos will be transferred to your uterus using a very thin catheter passed through your vagina and cervix. This is usually done in an exam room while you're awake. You and your doctor will decide how many embryos to transfer. The remaining embryos can be frozen and stored for future use.

- If an embryo implants, you will continue to take hormones for several months to support the pregnancy.

For more information about using donor eggs, visit the Parents Via Egg Donation website www.parentsviaeggdonation.org.

Using donor embryos

If you can't become pregnant naturally or with ovarian stimulation, and you didn't freeze eggs or embryos before treatment, you may be able to use embryos from a donor. The child won't have genes from you or your partner, but you would experience pregnancy and childbirth.

Embryos are usually donated by couples who have gone through fertility treatment and have unused frozen embryos. The terms "embryo adoption" and "embryo donation" have both been used to describe this but reproductive specialists generally feel that "embryo donation" is the correct term.

Finding donor embryos

Your fertility center may have an embryo donor program or can recommend an embryo donation agency. Some agencies are nondenominational (not associated with any religion) and some are faith-based. The cost of donor embryos is less than that of donor eggs.

What is involved

Once the financial and legal arrangements are complete, your reproductive endocrinologist will plan the timing of the

embryo transfer. There are several steps to this process:

- To prime the lining of your uterus for implantation of the embryo, you will take hormones for about 3 weeks.
- One or more embryos will be thawed and transferred to your uterus using a very thin catheter passed through your vagina and cervix. This is usually done in an exam room while you're awake. You and your doctor will decide how many embryos to transfer.
- If an embryo has implanted, you will continue to take hormones for several months to support the pregnancy.

Surrogacy with a gestational carrier

Some women can't carry a pregnancy after cancer treatment. This can happen if your uterus was removed, if you had high-dose radiation to your pelvis, or if other medical issues make it unsafe for you to be pregnant. If this is the case, you can have another woman carry a pregnancy for you. Embryos you froze before treatment, fresh embryos created with your own eggs or donated eggs, or donor embryos are transferred into the carrier's uterus. She won't have any genetic relationship to the child.

Laws related to surrogacy vary from state to state. Some states don't allow a woman to be paid to carry a pregnancy. Some states require that the intended parents adopt the child after birth. Because the laws on surrogacy are very complex, we recommend that you talk with a reproductive lawyer before

starting this process.

Finding a gestational carrier

To qualify as a gestational carrier, a woman usually needs to have had at least 1 full-term pregnancy with delivery of a healthy child. In addition, she will need to live in a state that allows a woman to be paid to carry a pregnancy for someone else. You can find a gestational carrier through a surrogacy agency or through a reproductive lawyer who specializes in surrogacy.

What is involved

Once you have found a possible gestational carrier, she should be carefully screened to make sure that she is medically and emotionally healthy. Then you will need to finalize the financial and legal arrangements. The cost of surrogacy can be \$80,000 to \$120,000, including the agency and legal fees, medical expenses, and compensation for the carrier. You may have a relative or friend who is willing to carry a pregnancy for you without being paid. This is a good option for some people and would be considerably less expensive. However, even with the best of intentions, there can be problems if expectations are not clearly defined. Even if you know the woman well, she should have psychological and medical screenings before becoming your gestational carrier. It's also important to talk with a lawyer to make sure that you both understand all that's involved and have a legal agreement.

A reproductive endocrinologist will plan the timing of the

embryo transfer to the gestational carrier. Throughout the pregnancy, you will communicate with each other as you have both agreed. You may even be allowed to be present at the birth.

For more information, visit the following websites:

- Organization of Parents through Surrogacy: www.opts.com
- Men Having Babies: www.menhavingbabies.org

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 neglect. 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

Other Issues to Consider When Exploring Options for Building a Family

Financial issues

The cost of each of these options varies based on:

- Your health insurance coverage for fertility treatment.
- The family building option you choose. Using donor eggs or gestational surrogacy is expensive because you will have other additional costs, such as:
 - Psychological and medical screening of the donor or

surrogate

- Medical costs not covered by their health insurance
- Travel expenses
- Compensation
- Agency fees
- Legal fees

Listed below are programs that provide financial help or grants to help people build a family.

- Bonei Olam: www.boneiolam.org (for Orthodox Jewish couples)
- The International Council on Infertility Information Dissemination (INCIID): www.inciid.org – select “IVF Scholarship”
- The Samfund: www.thesamfund.org – select “Grants” under “Get Help”

You can also explore the following options:

- The New York State Infertility Demonstration Program provides grants to help with medical costs based on income. Ask your fertility center if they offer this and if you’re eligible.
- Some pharmaceutical companies provide fertility medications for a reduced fee or for free. Ask your fertility center if you’re eligible and to help you apply.

- Some banks and financing companies loan money for family building.
- Some fertility centers, agencies, or lawyers work out a payment plan for you. Some offer a sliding scale based on your income.
- Some people ask family or friends to organize fund-raising efforts in their community, house of worship, or workplace. Learn about crowdfunding here:
 - www.crowdcruix.com/tips-crowdfunding-medical-bills-expenses
 - www.crowdcruix.com/best-gofundme-alternatives

If you're considering adoption:

- Ask your accountant if you're eligible for the Federal Adoption Expense Tax Credit. Based on your income, this may give you a tax credit on your federal income taxes for eligible adoption expenses.
- Some employers provide adoption benefits to help with costs.
- Help Us Adopt provides financial grants to help with adoption costs. For more information, go to www.helpusadopt.org
- National Adoption Foundation provides grants, loans, and information about other financial resources for adoption. For more information, go to fundyouradoption.org

Legal issues

Laws on third-party reproduction (such as donor eggs, donor embryos, and gestational surrogates) and adoption vary by state. Legal issues with gestational surrogacy are particularly complicated. Ask the staff at your fertility center or agency how they address these legal issues and if they can recommend a lawyer. If not, you may want to speak with a reproductive or adoption lawyer on your own. Things to consider when selecting a lawyer include:

- Experience in the family building option(s) in which you're interested.
- The state in which they are licensed. Reproductive and adoption law varies by state. Make sure your lawyer is licensed in and knowledgeable about the states where you and your donor, surrogate, or birth parents live.
- Other services provided. For example, if your lawyer can help you find an agency, donor, surrogate, or birth parents, or review legal documents and assist with adoption if needed.
- How the lawyer charges for their services. Lawyers can charge a flat fee or charge by the hour.

You can find lawyers who specialize in reproductive law through the following organizations:

- American Academy of Assisted Reproductive Technology Attorneys: www.adoptionart.org

- Path2Parenthood: www.path2parenthood.org – select “Find a Professional”
- RESOLVE: The National Infertility Association: www.resolve.org – under “Find an Expert” select “Search Professionals”

Emotional issues

If you can't get pregnant naturally, the process of building your family can be complicated, time-consuming, and expensive. It's common to experience feelings of anger, loss, or grief. If you find that these emotions become overwhelming, last for weeks, or discourage you from taking the next steps, consider talking with a counselor.

Your fertility center or agency may recommend a mental health counselor for you. You can also find counselors who specialize in dealing with infertility through the following organizations:

- Path2Parenthood: www.path2parenthood.org – select “Find a Professional”
- American Society of Reproductive Medicine, Reproductive Facts: www.reproductivefacts.org – under “Resources,” select “Find a Healthcare Professional”
- RESOLVE: The National Infertility Association: www.resolve.org – under “Find an Expert” select “Search Professionals”

How to Get Started

This resource provides just a brief overview of the options for building your family after cancer treatment. Below are steps to help you further explore your options.

1. Learn more. The next section lists resources for additional information.
2. Speak with your oncologist when you're ready to build your family. Explain what you're considering, and ask if they have any concerns based on your personal medical situation.
3. Make appointments with specialists.
 - If you're considering becoming pregnant and your doctor recommends you work with a MFM specialist, schedule a consultation before you try to become pregnant.
 - If you're considering assisted reproductive technology (including ovarian stimulation, IVF, or using donor eggs, donor embryos, or gestational surrogates), schedule an appointment with a reproductive endocrinologist. They will perform a fertility evaluation that will help clarify which options may be best for you. Your reproductive endocrinologist may also help you select donors, surrogates, agencies, lawyers, and mental health specialists.
 - If you're considering adoption, schedule a consultation with an adoption agency or lawyer.
4. Plan for the financial costs. Ask your fertility center, agency,

- or lawyer for a detailed list of all of the expenses involved.
5. Depending on which option you choose to build your family, you may need to meet with a mental health professional at some point. They will make sure that you understand what's involved and that you're ready to go through this process. Mental health professionals can also provide support as you make decisions about the options presented to you.
 6. Talk with family and friends about what you're considering. Ask for their support.

This process can be complicated. However, many people have gone through this before you and have been successful in building families after cancer treatment.

Resources for You to Learn More About Your Options

Many professional organizations provide information and support on all options for building a family. Search within each of their websites for specific topics.

- American Society of Reproductive Medicine, Reproductive Facts: www.reproductivefacts.org
- The International Council on Infertility Information Dissemination (INCIID): www.inciid.org
- Path2Parenthood: www.path2parenthood.org
- RESOLVE: The National Infertility Association: www.resolve.org

- Society for Assisted Reproductive Technology:
www.sart.org

You may also find this publication to be helpful: *Having Children After Cancer*, Gina M Shaw, Celestial Arts, Berkley, 2011.

MSK Resources

If you would like more information from a Fertility Nurse Specialists, ask your doctor or nurse for a referral.

MSK Fertility website

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

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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