



Preserving Fertility in Women with Cancer

Some cancers and their treatment can affect a woman's fertility. This means her ability to conceive and/or carry a child. The changes may only last a short time after treatment or they may be permanent. This fact sheet answers some common questions about this topic and suggests ways to try and preserve fertility for women with cancer. Knowing what can be done may help women with cancer make an informed decision about minimising fertility problems.

This fact sheet does not replace talking to your doctors or nurses. It aims to act as a tool to help you prepare questions you can ask your healthcare team.

Finding out your fertility might be affected

Being given a cancer diagnosis comes as a huge shock to most people. Many women say they go through a roller coaster of very uncomfortable feelings. Your future is uncertain; you may feel frightened about having treatment and your long - term survival. You may also be grieving for how life was before your diagnosis.

Your medical team will support you through this difficult time. They will discuss your cancer and its treatment in detail with you. Talking about how treatment may affect your hormones/reproductive organs will be part of the discussions. There may be changes to your reproductive function and/or fertility in the future. Fertility will usually return after treatment finishes. However, for some women damage to the eggs or hormones may mean they will have problems with fertility after cancer treatment is over.

For women who already have children or do not want them, this may not be a concern. However, for those who want children this can come as another major shock. For many it will feel more upsetting than their actual cancer diagnosis.



When should I ask my doctor about my fertility?

Not all women who have cancer and its treatment will become infertile. Many will go on to naturally conceive a child even if it takes time after treatment finishes. However, it is important to ask your doctor about your risk of infertility and preservation options **before** treatment begins. If necessary your cancer specialist can refer you to a fertility specialist. These are doctors who have expert knowledge about how to preserve your fertility.

Some women may find it difficult to ask about infertility but you will have fewer options if you wait until after your treatment starts. Your medical team will be sensitive to your concerns and want to help. See Questions to ask your doctor at the end of this fact sheet.

How can cancer and its treatment affect a woman's fertility?

Cancer treatments such as chemotherapy, radiation, bone marrow/stem cell transplant and some surgery can damage a woman's eggs causing fertility problems. Infertility may be temporary or permanent.

The types of problems affecting a woman's fertility will depend on:

- age (fertility naturally declines with age and the side effects of chemotherapy are much more severe as women get older)
- existing fertility problems
- the type of cancer and the type, dose and frequency of treatment

Cancer and its treatment may affect woman's ability to conceive a child naturally by causing:

- a decrease in the number of eggs
- the removal of a part or all reproductive organs (e.g. hysterectomy or oophorectomy)
- decrease in production of sex hormones
- changes in emotional and physical desire to have sex due to side effects of treatment (e.g. tiredness, or altered body image)



Which cancer treatments affect a woman's fertility?

For a woman to become pregnant ovulation and fertilisation need to be working perfectly. Girls are born with a certain amount of eggs for life. They cannot make more eggs like a man can make more sperm. Any interruption or damage to women's reproductive organs due to cancer treatment may cause fertility problems.

Chemotherapy

Chemotherapy (cytotoxics) drugs are used to kill or slow the growth of cancer cells. Some of these drugs can affect a woman's fertility. It will depend on which drugs are used as well as the dose and length of time they are given. Very high doses of chemotherapy will cause more damage than lower doses. A woman's age is an important factor influencing how chemotherapy will affect her fertility. For example, after the age of 40 it is more likely that the treatment will cause permanent infertility.

Ovarian function usually stops during chemotherapy but often returns after cancer treatment. However, there is still a very high risk that ovarian failure and menopause will develop a few years after treatment finishes. This is often at the time when a woman wants to start having her family.

Your doctor will discuss with you in detail about the drugs you are having and their specific fertility- related side effects.

Radiotherapy

This is treatment using high - energy waves similar to X-rays which kills or slows the growth of cancer cells. Radiation given directly to or near the ovaries as well as near the vagina can cause damage. It may result in temporary or permanent menopause.

Radiotherapy to the brain for brain tumours can cause damage to the pituitary gland. This gland in the brain plays an important role in fertility. It sends messages to the ovaries to make sex hormones involved in egg production. It is possible to use medical treatment to replace the affected hormones and restore normal function.



Surgery

Women who need surgery to treat cancers affecting the ovaries, cervix or uterus may face problems with infertility. Removing the uterus (hysterectomy) will mean a woman won't be able to carry a child. If your ovaries are taken out (oophorectomy) you will no longer be able to produce eggs for fertilisation. Removing the cervix (trachelectomy) will also affect your ability to carry a child. Your doctor may be able to do ovarian tissue sparing surgery for your cancer. But this is not always possible.

Surgery to the brain for brain tumours can cause damage to the pituitary gland and the hormones involved in egg production.

Blood and marrow transplants (BMT)

These terms are used to describe a treatment that happens in three steps:

- step one: collection of stem cells either from the bone marrow, peripheral blood or from umbilical cord blood
- step two: giving high doses of chemotherapy and possibly radiotherapy (known as conditioning treatment)
- step three: infusing the stem cells back into the patient to make sure the bone marrow recovers and keeps making healthy blood cells

This type of treatment is mainly used for people with leukaemia, myeloma and lymphoma. The drugs used and the very high doses of chemotherapy and radiotherapy increase a person's risk of infertility. If you need a transplant as part of your cancer treatment your doctor will talk to you in detail about it.

Hormone Therapy and other treatments

Hormone therapy given to help prevent some cancers coming back (e.g. Tamoxifen for breast cancer) can stop the production of female sex hormones. These hormones, oestrogen and progesterone, are necessary for fertility.



Other newer cancer treatments such as immunotherapy may also harm your fertility. But more research is necessary before we will know this for sure.

What fertility preservation options are available to women?

Several factors affect a woman's options for preserving her fertility before and after cancer treatment. These include her age, prognosis, sexual maturity and cultural and religious beliefs.

Your cancer specialist and/or fertility specialist will be able to discuss options most suitable for your situation. The effectiveness of each preservation method varies and not all options will work for every woman.

Many women find it helpful to speak with a fertility counsellor along with their specialist doctors to help make the right decision.

Non-invasive methods include:

- trying to reduce the impact of chemotherapy on fertility
- protecting/shielding the ovaries during radiotherapy if the cancer is in another part of the body

Your doctor may recommend methods involving more thought, discussion and written consent on your behalf. We discuss these briefly under the following headings. For more detailed information look in the further help and support section at the end of this fact sheet.

Cryopreservation (freezing and banking eggs and embryos)

Embryo banking/freezing

Most people will be familiar with the term 'in vitro fertilisation' (IVF). This is what embryo banking is. It is the most effective way to preserve your fertility. It involves taking fertility drugs and then having your eggs collected by a short surgical procedure. The eggs are fertilised with your partner's or donor sperm in a laboratory to create embryos. The embryos are then frozen and kept until you are ready to have a child.



Egg banking/freezing

This means freezing your eggs on their own; they are not fertilised with sperm before freezing happens. The process also involves taking fertility drugs to stimulate egg production and then having the eggs collected. This method is good for women who do not have a partner yet or wish to keep their options open.

Eggs and embryos can be frozen for many years. However, some storage facilities will have a set time for storing eggs and embryos, unless you advise otherwise or pay to store them longer. It is important to ask how long a facility will keep an individual's frozen eggs/embryos. Egg storage for many years can be less complicated than storing embryos for a long time. This is because of the ethical and legal issues related to storing embryos for an indefinite period of time.

Ovarian tissue banking/freezing

This procedure involves surgically removing a small piece of your ovarian tissue and then freezing it. If treatment involves high dose chemotherapy/bone marrow transplant then the whole ovary may be removed. It is then transplanted back after your treatment, if there is permanent ovarian failure. Sometimes this is the only procedure available if you need to start cancer treatment quickly or if you have not gone through puberty. Women have conceived and had babies after cancer treatment using this method it is therefore now no longer considered experimental although it cannot be considered to be a guarantee of future fertility.

Surgery to protect your ovaries from radiotherapy

This is called 'ovarian transposition.' It involves having an operation to move one or both of your ovaries to another part of your body during your radiotherapy treatment. It allows protection of your ovaries during radiotherapy. The ovaries may later be put back into place once the treatment is over. The operation is called an oophropexy. Success rates depend on how far the ovary can be moved away from the radiotherapy site.



Fertility sparing surgery

It is sometimes possible to preserve parts of the reproductive organs to increase your possibility of getting pregnant. For example, women with very early stage ovarian cancer in just one ovary may have only one ovary taken out leaving the uterus as well. This type of surgery is also possible for some women with very early stage cervical cancer. The cervix can be removed but the uterus is left in place to allow a woman to carry a baby but deliver with caesarean section.

Medical therapy to suppress ovarian function

This involves taking medications to protect the ovaries during treatment. However, it may not be protective when extremely high doses of chemotherapy are used prior to bone marrow transplant

After treatment is over

After treatment is over many women's menstrual cycle will return to normal. Many will go on to conceive their own children, either naturally or using their banked eggs or embryos. However for some women who have had cancer treatment, long-term ovarian function will be reduced. These women can go through early menopause, often five to seven years earlier than would be otherwise expected.

After treatment finishes you may also want to have your fertility status analysed to find out if you are fertile.

Questions for your doctor

Raising the topic about fertility preservation can be difficult but it is important that you discuss some of these issues with your doctor. These questions may help you begin the conversation:

- How will my cancer treatment affect my chances of having a child in the future?
- Will I become infertile because of my cancer treatment?
- Do all chemotherapy drugs affect fertility?



- Who can I talk to about my treatment and the possible fertility side-effects of treatment?
- Can you recommend a fertility specialist I can talk to?
- What options do I have to preserve my fertility?
- I would like to freeze eggs or embryos. Is this an option for me? Could you please give me more information?
- Do the methods used to preserve fertility guarantee I will be able to have my own child in the future?
- What clinical trials are available to me?
- Where can I find support for coping with fertility issues?
- Whom can I contact if I need help talking with my spouse or partner about fertility issues?
- How will I know if I am fertile after cancer treatment?

Where to get further help and information

This fact sheet has only provided you with an overview of fertility issues for women with cancer. It is important you find out as much as you can so as you can make an informed decision. For more detailed information please refer to our other factsheets and the following excellent resources:

- Other fact sheets from the Future Fertility website www.futurefertility.com.au or www.futurefertility.com.nz
- Fertility After Cancer. A guide for people with cancer, family and friends. First published June 2014. © Cancer Council Australia 2014.
- The COSA wiki guidelines online at http://wiki.cancer.org.au/australia/COSA:AYA_cancer_fertility_preservation
- Fertile Hope www.fertilehope.org
- Fertility Society of Australia (<http://www.fertilitysociety.com.au/>)

You may also like to call a Cancer Helpline service:

- Australia 13 11 20
- New Zealand call 0800 226 237

Both these helplines will allow you to speak with an experienced cancer nurse.