

# Cancer and Fertility

## Introduction

This booklet is written to help you better understand the potential effect of cancer and its treatment on your fertility.

There is a short period of time after a cancer diagnosis when the most effective fertility preservation treatment can take place, which is why it is critical that anyone diagnosed with cancer is able to access timely and accurate information about fertility preservation options if their family is incomplete.

## Our Doctors

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*Flinders Fertility will endeavour to arrange a consultation with one of its Fertility Specialists as soon as practical after referral by an oncologist, and there may be occasions when a consultation will be arranged prior to the receipt of a referral. When booking a consultation, please specify that the referral is for "fertility preservation".*

## Cancer and Fertility

Not all cancers or cancer treatments will affect your ability to have a baby, but many do. The best course of action is to ask your oncologist about the effects your cancer or treatments are likely to have on your fertility, and to meet with a fertility specialist to discuss the fertility preservation options that are available for you. Generally, the earlier you consult with a fertility specialist, the broader the range of treatment options you will be

able to consider.

The type of cancer treatment you get depends on many factors and your specialist team will have taken all these into account before deciding on a treatment plan for you. These factors include:

- Tumour size
- Involvement of lymph nodes or other signs of spreading
- Cancer grade (i.e. how different it looks compared to normal tissue)

Unfortunately, some of the treatments selected to help fight your cancer can also affect your ability to have children or cause infertility. The effects of these treatments may be temporary or permanent. It is therefore very important that you discuss any fertility issues with your specialist team before you begin your cancer treatment.

Depending on the type and stage of your cancer you may have one or all of the treatments below:

- Surgery and Irradiation
- Chemotherapy
- Hormonal therapy (e.g. for breast or prostate cancers)

## **Surgery and Irradiation**

If your cancer does not affect your reproductive system, and if your reproductive organs can be shielded from the effects of radiation, surgery and radiation may not affect fertility. Damage caused by surgery or irradiation to the ovaries or testes, fallopian tubes or vas deferens, or to the uterus or cervix, may prevent natural conception and pregnancy. Some parts of the brain (the hypothalamus and pituitary) are also involved in fertility in men and women, and these also need to be protected from damage caused by the cancer or the treatment to preserve fertility. Shielding of pelvic organs is frequently utilised.

## **Chemotherapy**

**For women:** Some chemotherapy medications can cause changes in the ovaries that stop eggs from being released or reduce the number of eggs stored in the ovaries. Chemotherapy can stop ovulation, disrupt hormonal levels, and cause your periods to stop (amenorrhoea). It can also induce early menopause. However, these effects may not always be permanent.

Cancer treatment has not been shown to cause genetic mutations in eggs. Studies on the children of women who conceived after cancer treatment do not show higher rates of congenital abnormalities, miscarriage or obstetric complications.

**For men:** Chemotherapy can reduce sperm numbers and motility, cause changes to the normal shape of sperm, and damage sperm chromosomes. Chemotherapy can cause sperm production to stop completely, but production may return when treatment is finished. Sometimes sperm production only returns years after treatment, and in some cases it does not return at all.

The three most important factors influencing fertility in cancer patients are:

- Age and existing fertility problems
- Type and dose of chemotherapy
- The site of the cancer

## **Age**

Women who are 40 years or older are more prone to permanent infertility from chemotherapy than younger women. The closer in age to natural menopause (average age 51) prior to starting chemotherapy, the more likely you are to be menopausal following treatment.

Women younger than 40 years, and especially younger than 35, have a greater chance of regaining ovarian function and only experiencing temporary infertility after chemotherapy. However, resumption of menstruation does not necessarily equate to return of fertility.

## **Type of Chemotherapy Drugs**

The chemotherapy drugs most likely to cause ovarian failure are a group called the "alkylating agents". For example, cyclophosphamide is an alkylating agent commonly used in combination with other drugs to treat breast cancer. Adriamycin is another commonly used agent and is considered medium risk. It is very important to discuss the infertility risk of your particular chemotherapy regimen with your oncologist.

## **Dose**

Generally the higher the dose of chemotherapy, the greater the risk of infertility.

## **Conclusion**

Overall, it is estimated that chemotherapy causes infertility in about 30% of men and women, and it is not possible to precisely predict who will be affected. For this reason it's important to have a discussion with your oncologist as soon as possible after a diagnosis.

## Options for Preserving Fertility

The following information is general and is intended to provide a starting point for you to become more informed about your fertility preservation options. You should discuss your own medical needs with your doctor.

### For Women

Type	Shielding
Description	Shielding of the genital/pelvic region with a lead apron during radiation therapy.
Timing	During radiation therapy.
Special Considerations	This protective measure should be used even during treatment of a distant area (e.g. if the breast is being irradiated) due to internal scatter of the radiation beam.

Type	Embryo Freezing (Cryopreservation)
Description	Eggs are collected and fertilised outside the body using the male partner's sperm (IVF). Good quality embryos are frozen and stored for future use. Ovarian follicles are stimulated by injections; ultrasound monitoring determines the best time for egg collection. Ovarian stimulation can be started regardless of menstrual cycle phase. For hormone-sensitive cancers, an adjusted stimulation protocol can be used.
Medical Status	Depends on the type of cancer, urgency of cancer treatment, and whether the woman has a male partner.
Timing	Before cancer treatment. Normally between surgery and commencement of chemo or radiation therapy.
Special Considerations	Embryo freezing may not be an option for women with highly aggressive malignancies. A male partner with viable sperm is required.

Type	Egg Freezing (Cryopreservation)
Description	The ovarian stimulation and egg collection procedures are identical to embryo freezing, but the eggs are frozen directly without prior fertilisation. The frozen eggs are preserved for future use in an IVF cycle.
Medical Status	Egg freezing is now an established fertility preservation technique. However, there is always uncertainty with regards to cycle outcome. Generally, as female age increases, more eggs are required to offer a chance at an ongoing pregnancy.
Timing	Before cancer treatment.
Special Considerations	Egg freezing may appeal to women without a male partner or women who do not wish to create an embryo immediately.

<b>Type</b>	<b>Medication to Suppress Ovarian Function</b>
<b>Description</b>	The use of gonadotrophin-releasing hormone agonists (e.g. Zoladex) before and during chemotherapy has been shown to potentially have a protective effect on the ovary.
<b>Medical Status</b>	Recent good evidence of efficacy.
<b>Timing</b>	At least one week before commencement of chemotherapy and continued during chemotherapy.
<b>Special Considerations</b>	Zoladex is administered via monthly injections. This treatment may not be beneficial in all cancers or all chemotherapy regimes.

<b>Type</b>	<b>Ovarian Tissue Cryopreservation and Transplantation</b>
<b>Description</b>	Ovarian tissue is surgically removed and cryopreserved prior to cancer treatment. Post treatment, thawed tissue can be grafted back where it can sometimes restore fertility and ovarian hormonal function. Around 100 live births have been reported from ovarian tissue transplantation worldwide.
<b>Medical Status</b>	Ovarian tissue transplantation is an emerging method and is not yet widely available. Note: this procedure is not currently available at Flinders Fertility.
<b>Timing</b>	Before cancer treatment. No hormonal stimulation required — will not cause undue delays to cancer treatment.
<b>Special Considerations</b>	This is the only fertility preservation option suitable for female prepubescent patients. There are ethical issues to be considered with its use in children and adolescents.

## For Men

<b>Type</b>	<b>Shielding</b>
<b>Description</b>	Shielding of the genital/pelvic region with a lead apron during radiation therapy.
<b>Timing</b>	During radiation therapy.
<b>Special Considerations</b>	Due to internal scatter of radiation beams, this treatment should be used even if the irradiation area is far away from the genital/pelvic region.

<b>Type</b>	<b>Sperm Freezing</b>
<b>Description</b>	Sperm cryopreservation is the freezing and storing of semen after masturbation or through surgical recovery. Men with extremely reduced sperm count and motility are still candidates for cryopreservation.
<b>Medical Status</b>	Sperm freezing is a proven and successful technique.
<b>Timing</b>	Before cancer treatment.

<b>Special Considerations</b>	It is strongly recommended that sperm be collected prior to cancer treatment because sperm quality may be compromised by treatment. Surgical sperm retrieval can be considered if the male cannot ejaculate or if there has been a prior vasectomy.
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<b>Type</b>	<b>Surgical Retrieval of Sperm</b>
<b>Description</b>	Men with nil or non-viable sperm in their ejaculate can undergo a surgical sperm retrieval procedure. Sperm can be collected from the epididymis or extracted from testicular tissue. If viable sperm are found, they will be cryopreserved for use in a future IVF/ICSI cycle. Post cancer treatment, surgical retrieval is available if surgery has disrupted normal function.
<b>Medical Status</b>	Surgical sperm retrieval and freezing is a proven and successful technique.
<b>Timing</b>	Before or after cancer treatment.
<b>Special Considerations</b>	For men with no viable sperm in their ejaculate before or after cancer treatment. Investigations performed prior to this procedure will help determine how likely it will be to retrieve viable sperm.

<b>Type</b>	<b>Testicular Tissue Storage</b>
<b>Description</b>	Currently still in the research phase, this procedure aims to preserve the potential fertility of prepubescent males who are not yet producing mature sperm cells. Testicular tissue (containing immature sperm cells) is frozen and stored for future use.
<b>Medical Status</b>	This procedure is still experimental and is only available in select specialised centres.
<b>Timing</b>	Before cancer treatment.
<b>Special Considerations</b>	For potential use in prepubescent males who are not yet producing mature sperm.

## Family Building Options After Cancer

Cancer survivors can become parents through a number of options including natural conception or using their own frozen gametes in an IVF cycle. Flinders Fertility has both anonymous and known sperm donor programmes. We can also facilitate the egg donation process from known egg donors.

There are also other options to become a parent, such as the use of other donor services (like embryo donation) or altruistic surrogacy in order to carry a pregnancy. However, these options are not currently available at Flinders Fertility. Outside of the fertility treatment area, adoption or fostering of children is another option for building a family.

### Egg Donation

<b>Description</b>	Egg donation refers to the use of eggs donated by another woman to assist an individual or couple in their attempt to become parents. The donor undergoes ovarian stimulation and egg collection. Eggs are fertilised with the recipient partner's sperm to create embryos, which are frozen and transferred during a frozen embryo transfer cycle. Children created will be genetically related to the male partner (unless donor sperm was used) but not to the female recipient.
<b>Eligibility</b>	Egg donation involves thorough medical assessment, detailed testing, and extended counselling of all parties — the recipient (and partner), the donor, and the donor's family. If you are unable to find your own donor, Flinders Fertility can provide advice on ways to advertise for a donor, but cannot recruit one for you.

### Sperm Donation

<b>Description</b>	Flinders Fertility has two sperm donor programmes: <b>Clinic recruited donors</b> — recruited by Flinders Fertility and available for use by numerous recipients; and <b>Known donors</b> — known to and recruited by the recipient and available for their use exclusively. Any individual sperm donor may be involved in the creation of up to ten families only.
<b>Eligibility</b>	People intending to enter the Flinders Fertility sperm donor programme are required to see the Flinders Fertility counsellor at least twice before starting treatment. The waiting period depends on preparation for treatment, the number of patients requesting the service, and the availability of sperm. It is usual to wait several months before treatment is available.

## More Help for Managing Your Cancer and Fertility

Your oncologist and Flinders Fertility specialist can help you by telling you:

- Whether your cancer and cancer treatment will affect your ability to have a baby.
- Your options for preserving fertility given your type of cancer and the urgency of treatment.
- Whether the fertility-preservation options will delay cancer treatment, and if so, for how long.
- How each option may affect your health and the health of your future children.

## Counselling Services

Newly diagnosed cancer patients may feel significant shock and emotional distress from the "double blow" of cancer and possible infertility. Professional fertility counsellors can offer confidential guidance and assistance during this emotionally demanding time. Counselling can help with:

**Decision Making:** Concerns about treatment options, differences of opinion with your partner, or how treatment fits with your other goals.

**Counselling for Change:** Clarifying normal stress or grief, understanding causes of pressure, and identifying personal strengths to help during difficult times.

**Non-Genetic Parenting:** People considering parenting following the use of donor sperm and/or donor eggs are required to meet with the Flinders Fertility counsellor.

**Information:** Support groups, adoption, relaxation options, planning techniques, and other services.

**Support:** Talking with someone who understands the ups and downs of cancer treatment, fertility treatment, or pregnancy loss.

## Costs Associated with Fertility Preservation

We know how devastating a cancer diagnosis can be. Flinders Fertility offers a bulk-billed fertility preservation cycle for patients with a recent cancer diagnosis whose fertility may be impacted and who require preservation before commencing oncology treatment.

*Bulk billing applies to fertility preservation only. Any subsequent fertility treatment or follow-up care is privately billed and may incur out-of-pocket costs.*

## Resources

### Breast Cancer Network Australia

Phone 1800 500 258

[www.bcna.org.au](http://www.bcna.org.au)

### Cancer Care Centre

Phone 08 8373 1470 | [admin@cancercarecentre.org.au](mailto:admin@cancercarecentre.org.au)

[www.cancercarecentre.org.au](http://www.cancercarecentre.org.au)

### Cancer Council South Australia

Phone 13 11 20 or 08 8291 4111 | [cc@cancersa.org.au](mailto:cc@cancersa.org.au)

[www.cancersa.org.au](http://www.cancersa.org.au)

### Future Fertility

[www.futurefertility.com.au](http://www.futurefertility.com.au)

### Livestrong Fertility

[www.livestrong.org/we-can-help/livestrong-fertility/](http://www.livestrong.org/we-can-help/livestrong-fertility/)

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