



# Fertility and Cancer

A guide for people with cancer,  
their families and friends

Practical  
and support  
information

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**13 11 20**



## **Fertility and Cancer**

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This booklet is funded through the generosity of the people of Australia.

## **Note to reader**

Always consult your doctor about matters that affect your health. This booklet is intended as a general introduction to the topic and should not be seen as a substitute for medical, legal or financial advice. You should obtain independent advice relevant to your specific situation from appropriate professionals and you may wish to discuss issues raised in this book with them.

All care is taken to ensure that the information in this booklet is accurate at the time of publication. Please note that information on cancer, including the diagnosis, treatment and prevention of cancer, is constantly being updated and revised by medical professionals and the research community. Cancer Council Australia and its members exclude all liability for any injury, loss or damage incurred by use of or reliance on the information provided in this booklet.

## **Cancer Council**

Cancer Council is Australia's peak non-government cancer control organisation. Through the eight state and territory Cancer Councils, we provide a broad range of programs and services to help improve the quality of life of people living with cancer, their families and friends. Cancer Councils also invest heavily in research and prevention. To make a donation and help us beat cancer, visit [cancer.org.au](http://cancer.org.au) or call your local Cancer Council.



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# Introduction

This booklet is for people who have questions about the impact of cancer treatment on their fertility.

Sometimes cancer and its treatment can affect a person's ability to conceive a child or maintain a pregnancy (fertility). If you want to become a parent, add to your family, or even if you've not thought about having children, we hope this booklet will help you understand how to preserve your fertility before treatment and protect it during treatment, and explain your options after treatment.

This booklet does not need to be read from cover to cover – just read the parts that are useful to you. Some medical terms that may be unfamiliar are explained in the glossary. You may also like to pass this booklet to your family and friends for their information.

## How this booklet was developed

This information was developed with help from a range of health professionals and people affected by cancer. The section for young adults is based on Cancer Australia's clinical practice guidelines for fertility and cancer treatment.<sup>1</sup>

If you or your family have any questions, call Cancer Council **13 11 20**. We can send you more information and connect you with support services in your area. Turn to the last page of this book for more details.



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# Contents

<b>Reproduction and fertility</b> .....	<b>4</b>
What factors affect fertility? .....	4
What is infertility? .....	4
How does reproduction work? .....	5
The female reproductive system .....	6
The male reproductive system .....	8
<b>Key questions</b> .....	<b>10</b>
How does cancer affect fertility? .....	10
When should I discuss fertility? .....	11
What is my risk of infertility? .....	11
How does age affect fertility after cancer? .....	12
Do fertility drugs cause cancer? .....	13
Should I have a child after I've had cancer? .....	13
How long should I wait to conceive after treatment? .....	13
Will having children cause the cancer to come back? .....	14
Do children of cancer survivors have more health problems? .....	14
What if I was already pregnant at diagnosis? .....	15
<b>Talking about fertility</b> .....	<b>16</b>
Seeing a fertility specialist .....	17

## For women

<b>Women's fertility and cancer treatments</b> .....	<b>19</b>
Chemotherapy .....	19
Radiotherapy .....	20
Surgery .....	21
Hormone therapy .....	22
Other treatments .....	23
Fertility outcomes .....	25
<b>Women's options before cancer treatment</b> .....	<b>28</b>
<b>Women's options after cancer treatment</b> .....	<b>33</b>
Natural conception .....	33
Donor eggs and embryos .....	34

## For men

<b>Men's fertility and cancer treatments.....</b>	<b>38</b>
Chemotherapy.....	38
Radiotherapy.....	39
Surgery.....	40
Hormone therapy.....	42
Other treatments.....	42
<b>Men's options before cancer treatment.....</b>	<b>43</b>
<b>Men's options after cancer treatment.....</b>	<b>47</b>
Natural conception.....	47
Intrauterine insemination (IUI).....	48
Intracytoplasmic sperm injection (ICSI).....	48
Donor sperm.....	49

## For children and adolescents

<b>Preserving fertility in children and adolescents.....</b>	<b>52</b>
<b>Assessing your fertility.....</b>	<b>56</b>
Fertility tests for women.....	56
Fertility tests for men.....	57
<b>Other paths to parenthood.....</b>	<b>59</b>
Surrogacy.....	59
Adoption and fostering.....	60
<b>Being child-free.....</b>	<b>62</b>
<b>Emotional impact.....</b>	<b>63</b>
Coping strategies.....	63
When you don't want to talk about it.....	66
<b>Relationships and sexuality.....</b>	<b>67</b>
The effect on partners.....	67
Sexuality and intimacy.....	68
Starting a new relationship.....	69
<b>Making decisions.....</b>	<b>70</b>
<b>Useful websites.....</b>	<b>72</b>
<b>Question checklist.....</b>	<b>74</b>
<b>Glossary.....</b>	<b>75</b>



# Reproduction and fertility

Many factors can affect a person's fertility. Fertility problems may be the result of either the woman or the man being unable to conceive, or both.

## What factors affect fertility?

Some of the common factors that affect fertility in both men and women include:

- **age** – fertility naturally declines with age (see page 12)
- **weight** – being significantly underweight or overweight
- **smoking** – active and passive smoking can harm reproductive health
- **other health issues** – endometriosis, fibroids, pelvic disease or cancer.

For more information about how cancer affects fertility, see the *Key questions* chapter on pages 10–15.

## What is infertility?

Infertility is defined as difficulty conceiving (getting pregnant).

For women under 35 years of age, the term usually refers to trying to conceive for 12 months; if a woman is 35 or over, the term is used after 6 months of trying.

Infertility is relatively common – it affects one in six Australian couples.<sup>2</sup> Many couples have difficulty coming to terms with infertility. For more information about how infertility can impact emotional health and relationships, see pages 63–69.

## How does reproduction work?

The female and male reproduction systems work together to make a baby. The process involves two kinds of sex cells (gametes): the female gamete – the ovum – and the male gamete – the sperm.

To have a baby, the ovum needs to be fertilised by a sperm. Each month, from puberty to menopause, one of the ovaries releases an egg (ovum). This is called ovulation.

Ovulation and sperm production are controlled by hormones, which are the body's chemical messengers that help it work properly. The pituitary gland in the brain produces hormones that stimulate the ovaries to make the female hormones oestrogen and progesterone and to release eggs, and the testicles to make the male hormone testosterone and sperm.

The egg travels from the ovary, down the fallopian tube. Here it can be fertilised by a sperm, which is ejaculated from the penis during orgasm (sexual climax). After the egg is fertilised by the sperm, it's called an embryo. The embryo then becomes implanted in the lining of the uterus. If the egg is not fertilised, women have a period (menstruation).

Women usually menstruate until the age of 45–55, when monthly periods stop. This is called menopause and happens because the ovaries stop producing the hormones that are necessary for ovulation. This is the natural end of a woman's reproductive years. If menopause occurs before age 40, this may be called early or premature menopause.

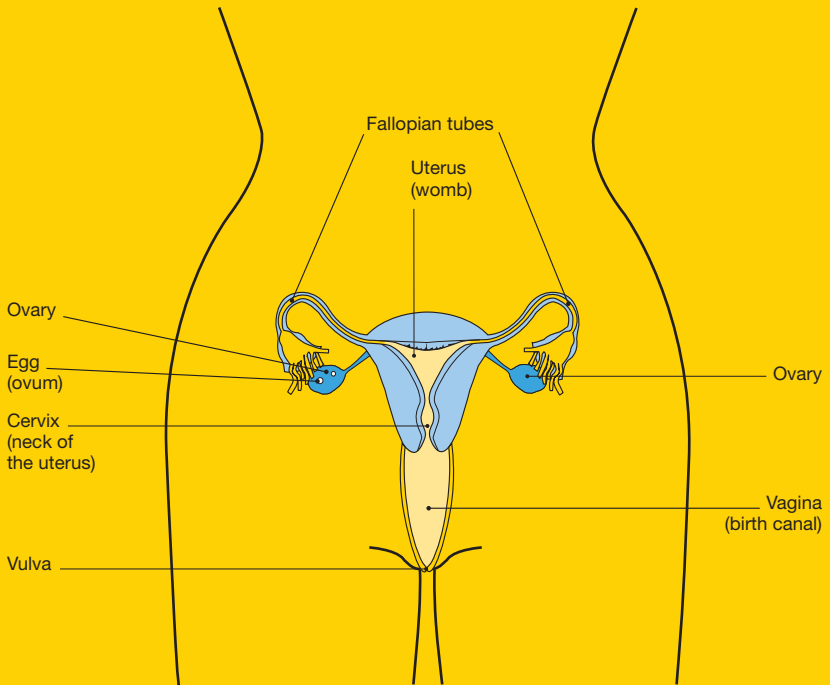
## The female reproductive system

The female reproductive system allows a woman to conceive a baby and become pregnant. It includes the following organs:

- **ovaries** – two small, oval-shaped organs in the lower abdomen. They contain follicles that hold immature eggs (oocytes), which eventually become mature eggs. The ovaries also make the female hormones oestrogen and progesterone
- **fallopian tubes** – two long, thin tubes that extend from the uterus and open near the ovaries. These tubes carry sperm to the eggs, and the eggs from the ovaries to the uterus
- **uterus (womb)** – the hollow organ where a baby (fetus) grows. The inner lining of the uterus is known as the endometrium. The uterus is joined to the vagina by the cervix
- **cervix (neck of the womb)** – the lower, cylinder-shaped entrance to the uterus. It produces moisture to lubricate the vagina. It also holds a fetus in the uterus during pregnancy and widens during childbirth
- **vagina (birth canal)** – a muscular tube that extends from the opening of the uterus (the cervix) to the vulva. This is the passageway through which menstrual blood flows, sexual intercourse occurs and a baby is born
- **vulva** – the collective name for the external part of a woman's sex organs.



# The female reproductive system

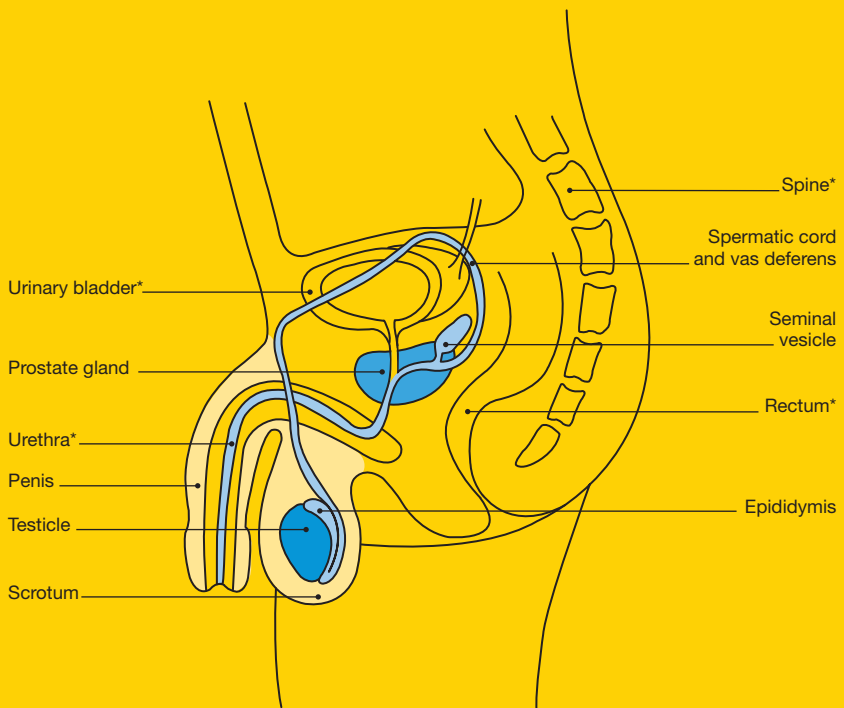


## The male reproductive system

The male reproductive system allows a man to father a baby. It includes the following organs:

- **testicles** – two small, egg-shaped glands that make and store sperm, and produce the male hormone testosterone. This is responsible for the development of male characteristics, sexual drive (libido) and the ability to have an erection
- **scrotum** – the loose pouch of skin at the base of the penis that holds the testicles
- **epididymes** – coiled tubes attached to the outer surface of the testicles. The immature sperm travel from each testicle to the epididymis, where they mature
- **spermatic cords and vas deferens** – the tubes running from each testicle to the penis. They contain blood vessels, nerves and lymph vessels, and carry sperm towards the penis
- **penis** – the main external sex organ, through which urine and semen pass
- **prostate** – a gland that produces the fluid that makes up a large part of semen. It is located near the nerves, blood vessels and muscles that control bladder function and erections
- **seminal vesicles** – glands that lie close to the prostate and produce secretions that form part of the semen.

## The male reproductive system



\* Not part of the male reproductive system.



## Key questions

This chapter covers some common questions men and women ask about fertility and cancer.

### **Q: How does cancer affect fertility?**

**A:** Cancer and its treatment may cause fertility problems.

This will depend on the type of cancer and treatment you have. Infertility can range from difficulty having a child to the inability to have a child. Infertility after treatment may be temporary, lasting months to years, or permanent.

**Women** – Some treatments may cause the ovaries to produce fewer eggs. Hormone production between the brain and the ovaries may also be affected. Surgery to treat cancer may involve removing reproductive organs. For further details, see *Women’s fertility and cancer treatments* on pages 19–27.

**Men** – Some treatments may cause issues with sperm quantity and quality (low numbers of sperm are made or the sperm that are made do not work properly) or poor sperm movement (motility). The tubes carrying the sperm may also be blocked. Sometimes reproductive organs are removed during an operation. For further details, see *Men’s fertility and cancer treatments* on pages 38–42.

“Advances in medical technology helped treat my cancer, then gave my wife and I the chance to become parents. I’m amazed at what was possible.”  Craig

## Q: When should I discuss fertility?

**A:** It's best to talk about ways to preserve or protect your fertility before cancer treatment begins. Even if you are not sure whether you want to have children (or more children), it's worthwhile having the discussion about storing your eggs or sperm early, so you have options in the future.

Fertility is something your treatment team should discuss with you, but you can also bring up the topic yourself. For suggestions on starting a conversation about fertility, see *Talking about fertility* on pages 16–18.

If you don't have the opportunity to see a fertility specialist before treatment, ask your GP or oncologist for a referral.

“ I now understand what they mean by ‘information means control’. Seeking accurate, reliable information was a huge coping strategy for me. ” Sonya

## Q: What is my risk of infertility?

**A:** The risk of infertility varies between people. You will need to discuss the effect of treatment on your fertility with your oncology team and fertility specialists for individual advice.

The US organisation Livestrong provides an online tool that shows the risk of infertility based on treatment and type of cancer. See [livestrong.org/we-can-help/fertility-services/risks](https://www.livestrong.org/we-can-help/fertility-services/risks).

## **Q: How does age affect fertility after cancer?**

**A:** Age is one of the most important factors that influences the impact of cancer treatment on fertility. It affects both women and men.

**Women's age and fertility** – Age is the most important factor affecting future pregnancies for women. Women are born with all the eggs they will have in their lifetime, and as women age, their eggs age too. Fertility starts to decline after 30 and the decline speeds up after 35. It then becomes harder to conceive and the risk of genetic abnormalities increases.

Before puberty, the effect of chemotherapy on the ovaries can be minimal. Radiotherapy may cause enough damage to the ovaries that puberty doesn't occur normally. After puberty, the ovaries are very sensitive to the effects of both chemotherapy and radiotherapy, and the risk increases as women get older. Even if reproductive function returns after treatment, women may experience early menopause (see page 25–27).

**Men's age and fertility** – The quality and quantity of men's sperm decreases with age. This means it will take longer for their partner to get pregnant. Before puberty, the effect of chemotherapy on the testicles is minimal, but radiotherapy may cause enough damage to testicles so puberty doesn't occur normally. After puberty, chemotherapy and radiotherapy affect sperm production and may cause infertility.

## Q: Do fertility drugs cause cancer?

**A:** For some fertility treatments, you will need to take extra hormones or stimulate your hormones. It's still not known how safe this is for people with hormone-sensitive cancer. Discuss the potential risks of particular fertility treatments with your cancer or fertility specialist. Taking hormone receptor blockers during egg collection will help reduce the risks.

## Q: Should I have a child after I've had cancer?

**A:** This is a very individual decision. A cancer diagnosis is likely to affect the way you think and feel about having a child. If you have a partner, you may want to discuss your family plans together. Fertility clinics often have counsellors who can talk through the pros and cons of your situation.

“ I was given a good prognosis, but we're still nervous about what happens if it comes back and we leave a child without a parent. That's my biggest concern. ” *Liam*

## Q: How long should I wait to conceive after treatment?

**A:** This depends on many factors, including the type of cancer and type of treatment. Some specialists advise waiting two years after treatment ends. This may be to allow your body to recover, or to see if the cancer comes back during this time. It's best to discuss the timing with your doctor.

## **Q: Will having children cause the cancer to come back?**

**A:** Research shows that pregnancy does not increase the chances of cancer coming back (recurring). However, studies have mainly focused on women with breast cancer. Research is continuing, so it's best to discuss this issue with your specialist. For more information about pregnancy and cancer, see page 23 for women, and page 39 for men.

Studies to date also suggest that survival rates for people who have children after cancer treatment are no different from those who don't have children after treatment.

## **Q: Do children of cancer survivors have more health problems?**

**A:** Current research suggests that children born to cancer survivors (after treatment has ended) are no more likely to have health problems than the general population.

Studies show that if one or both parents have a history of cancer, their child is at no greater risk of getting cancer than anyone else. The exception is if cancer runs in the family through an inherited syndrome. For more information, see *If cancer genes are present* on page 58.

Your fertility specialist or genetic counsellor is the most qualified person to give you up-to-date information about the risks of particular fertility treatments.



## Q: What if I was already pregnant at diagnosis?

**A:** Being diagnosed with cancer during pregnancy is rare – about one in 1000 women are affected.

It may still be possible to have cancer treatment during pregnancy. The potential risks and benefits need to be discussed before treatment begins. Sometimes treatment can be delayed until after the birth. If necessary, chemotherapy can be safely used after the first trimester (12+ weeks).

Some women diagnosed with cancer in the early stages of pregnancy decide to terminate so they can immediately start treatment, while others who are diagnosed later in the pregnancy choose to deliver before the due date. Before making this decision, talk to your cancer specialist and obstetrician for information and support.

Women wishing to breastfeed need to be aware that the drugs can be passed to the baby through the breastmilk and that it's not possible to breastfeed during chemotherapy and other cancer treatments. For support, contact the Australian Breastfeeding Association on 1800 686 268.

🗨️ My oncologist wanted to start treatment as soon as possible, so it was a case of my obstetrician and oncologist deciding on a day to deliver my son, then starting my cancer treatment. He was delivered safely at 32 weeks. 🗨️ *Lily*



# Talking about fertility

Your doctor should discuss any risk to your fertility before you start cancer treatment.

If you are concerned about your fertility, you may need to raise the topic with your treatment team – see the box below for some suggestions on how to start this conversation.

Some people feel too overwhelmed with the amount of cancer information they are given to bring up fertility concerns. You may prefer to wait and see if the topic is raised at a consultation. However, even if you aren't sure what you want, it's important that your doctor knows fertility is a priority for you. This gives your specialists the opportunity to work towards keeping your fertility options open for the future.

## Ways to raise the topic of fertility

You have the right to bring up fertility issues with your health professionals at any time. Here are some suggestions:

- Before we start treatment, I want to talk about my fertility options with a specialist. Who would you recommend?
- How will this treatment affect my chances of having a child in the future?
- Will any of these chemotherapy drugs reduce my fertility?
- Should I think about storing sperm/eggs/embryos before treatment starts?

## Seeing a fertility specialist

Fertility specialists are doctors who have experience managing fertility issues. Those who have completed additional training are sometimes called reproductive endocrinologists. You may also see a fertility counsellor or a genetic counsellor.

When making an appointment, let the clinic or specialist know that you are having treatment for cancer so that they give you an appointment as soon as possible. During the appointment, the specialist will talk through what you want and the options available to you. Your treating cancer doctor will give input, and together you can decide what works with your cancer treatment plan.

If you have a partner, try to attend appointments together and include them in the decision-making process. Alternatively, you may wish to bring a family member or friend for support.

Some people find the process of talking to a fertility specialist stressful. You may want to plan some questions in advance and take notes of what is discussed so you can review them later. The information in this booklet about dealing with emotional issues and the impact on your relationships may also be helpful (see pages 63–69).

“ The first time I met my surgeon she said, ‘You should go and see a fertility specialist.’ It all happened very quickly. The only way to describe the process is that it was overwhelming. However, it’s better not to delay it. ” *Mackenzie*

## Feeling respected

Anyone diagnosed with cancer should be able to have a direct and honest conversation with their doctor about fertility and be able to explore their options, regardless of sexual preference or age. You don't need to have a partner to have these types of discussions.

It is important that you (and your partner, if you have one) feel respected and included in all discussions with health professionals. Building an open and trusting relationship with your treatment team will enable you to ask questions and seek support.

## Not feeling ready

A cancer diagnosis may mean you need to make decisions about your fertility before you've given much thought to whether you want to have a child in the future. This may make you feel stressed and overwhelmed, particularly when you have just been diagnosed with cancer.

Even if you think, 'But I don't want kids anyway' or 'My family is complete', try to give yourself as many choices as possible because you might change your mind later. The section in this booklet about informed decision-making may be helpful (see pages 70–71).

Your fertility specialist or counsellor will probably encourage you to consider as many fertility options as possible.



# Women's fertility and cancer treatments



This chapter provides an overview of cancer treatments and how they affect women's fertility. The most common treatments for cancer are chemotherapy, radiotherapy, surgery and hormone therapy.

To find out more about chemotherapy, radiotherapy and surgery, call Cancer Council 13 11 20 for free booklets or download digital versions from your local Cancer Council website.

## Chemotherapy

Chemotherapy uses drugs to kill or slow the growth of cancer cells. These are called cytotoxic drugs. Chemotherapy drugs kill fast-growing cells such as cancer cells. The drugs can also affect other cells that grow quickly, such as the reproductive cells.

The risk of infertility depends on several factors:

- **the types of chemotherapy drugs used** – damage to eggs is more common with chemotherapy drugs in the alkylating class
- **the dose and duration of chemotherapy treatment** – the risk increases with higher doses and longer treatment duration
- **your age** – the number and quality of eggs start to decline naturally as a woman gets older (see page 12).

Chemotherapy can also reduce the hormones produced by the ovaries. This may cause some women's periods to become irregular, but they often return after treatment ends. For other women, periods may stop, which will bring on menopause. After menopause, women can't conceive children with their own eggs. For more information, see *Fertility outcomes* on pages 25–26.

Some chemotherapy drugs can also affect your heart and lungs. If the drugs cause long-term muscle damage, this may complicate a future pregnancy and delivery. Your specialist will talk to you about what precautions to take during pregnancy.

## Radiotherapy

Radiotherapy (also called radiation therapy) uses x-rays to kill cancer cells or damage them so they cannot grow and multiply. It can be delivered externally by external beam radiation, or given internally.

The risk of infertility will depend on the area treated and the dose (measured in grays) of the radiotherapy.

- External or internal radiotherapy to the pelvic area for cancer of the rectum, bladder, cervix or vagina can cause the ovaries to stop producing hormones, which results in temporary or permanent menopause.
- Treatment to the uterus can increase the risk of miscarriage, premature birth and low-birth-weight infant.
- Radiotherapy to the brain may damage areas that control the production of hormones that stimulate the ovaries to release an egg each month.



If you have both chemotherapy and radiotherapy, the risk of infertility is higher.



## Surgery

Surgery that removes part or all of the reproductive organs, such as the ovaries, fallopian tubes, uterus and cervix, can cause infertility.

**Removal of the uterus (hysterectomy)** – A hysterectomy may be used to treat gynaecological cancers, such as cancer of the cervix, ovary, uterus and endometrium (lining of the uterus), and sometimes, cancer of the vagina. After a hysterectomy, you will be unable to become pregnant and your periods will stop.

**Removal of the ovaries (oophorectomy)** – If both ovaries are removed (bilateral oophorectomy), and if you haven't already been through menopause, you will experience early menopause. You will no longer have periods or be able to become pregnant.

**Removal of the whole bladder (radical cystectomy)** – If bladder cancer has spread to the abdominal area, the uterus, ovaries, a small portion of the vagina and the fallopian tubes may be removed. If you have not yet gone through menopause, this will cause your periods to stop and you will be unable to have children naturally.

### Reducing the impact on organs

Sometimes, it's possible to save the reproductive organs (known as fertility-sparing surgery). This may be an option for some types of early-stage gynaecological cancers. See page 30 for some examples of fertility-sparing surgery.

## Hormone therapy

Hormones are naturally produced in the body; however, they can cause some types of cancers to grow. The aim of hormone therapy is to slow down the growth of the cancer.

A hormone receptor is a protein in a cell. Hormone therapy is used for women who have hormone receptors on their cancer cells. This means the growth of cancer cells is affected by the female hormones oestrogen and progesterone. Cancer cells with hormone receptors on them are said to be hormone receptor positive. There are two types of hormone receptors: oestrogen receptors and progesterone receptors.

Hormone therapy blocks the same hormones required for fertility, so it will delay the opportunity to try for a baby. However, it may be possible to store eggs or embryos before hormone therapy – see pages 28–29 for more information about this process.

Anti-oestrogen drugs (such as tamoxifen, goserelin and aromatase inhibitors) are used to treat oestrogen-sensitive cancers to reduce the risk of recurrence. Many anti-oestrogen drugs are taken for several years. During this time, pregnancy should be avoided, as there is a risk the drugs could harm an unborn child.



If you are on hormone therapy and want to become pregnant, talk to your treatment team or fertility specialist about the advantages and disadvantages of stopping hormone therapy.





## Other treatments

Other treatments for cancer include stem cell transplants, immunotherapy and targeted therapies.

Stem cell transplants often require high doses of chemotherapy and, possibly, radiotherapy. This is given before the transplant to destroy cancer cells in the body and weaken the immune system so that it will not attack a donor's cells during the transplant. High-dose chemotherapy or radiotherapy may affect fertility.

The effects of immunotherapy and targeted therapies on fertility and pregnancy are not yet fully understood. Early research suggests some targeted therapy drugs can cause ovarian failure. It is important to discuss your fertility options with your cancer treatment team or fertility specialist.

### Avoiding pregnancy during treatment

Some cancer treatments, such as chemotherapy or radiotherapy, can harm an unborn baby or cause birth defects.

As you might be fertile during some types of treatment, you will need to use your preferred form of contraception to avoid pregnancy during treatment.

Your treatment team and fertility specialists may also advise you to wait between six months and two years before starting fertility treatment or trying to conceive naturally. This will depend on the type of treatment you've had. For example, some chemotherapy drugs may have damaged any developing eggs.



## Monica's story

I was diagnosed at age 29 with oestrogen-receptive breast cancer. My partner and I had been dating for a year and a half. Our relationship was strong and I wanted kids in the next 1–2 years. My older sister was having problems conceiving, so I didn't want to wait and discover that I had the same problems.

From day one, the health professionals talked about fertility with us. However, when I mentioned to the medical oncologist that I was going to see a fertility specialist, her response was, "A lot of people are concerned about their fertility, but we need to save your life." I found her cold, but I didn't want to regret not exploring my options.

The fertility specialist harvested eggs through the IVF process. We were able to use a drug that didn't introduce more oestrogen to my body. The timing of the egg harvest also worked well

with my cycle, so it was only a two-week delay before I could start chemotherapy. This timing made the medical oncologist more positive.

They can't say how successful the IVF process is going to be – unfortunately, for me, they could only harvest one mature egg.

At this point, my partner and I had to decide: do we freeze my egg, or a combination of the two of us in an embryo? We needed to consider what would happen if we didn't stay together for the long term. You know, it takes a lot of courage to acknowledge these difficult questions.

We decided to freeze an embryo, because the success rates of having a live birth from an embryo are slightly better than a frozen egg. We feel we will be together for a long time, so hopefully the embryo will give us the best chance possible when we want to have a baby.



## Fertility outcomes

Many women are able to conceive after chemotherapy without medical assistance. However, about one in three women will experience one of the following issues.

### Premature ovarian failure

During treatment, and for some time afterwards, you may go through premature ovarian failure. This means that your ovaries stop producing enough hormones or mature eggs. Premature ovarian failure may be temporary or permanent, and you will experience occasional or no periods, and symptoms similar to menopause (see next page).

Temporary ovarian failure increases the risk of permanent ovarian failure or early menopause. However, if you have been in ovarian failure for a number of years, the chances of your ovaries functioning normally again decrease.

### Early menopause

Early menopause (premature permanent ovarian failure) is when you stop having menstrual periods because you have no eggs left. The eggs may have been destroyed or damaged by treatment.

While menopause means you won't ovulate, it is still possible to carry a baby if you have a uterus and use stored eggs or donor eggs.

“Having to go through menopause at a young age was unfair. I feel like I'm just this old washed-up woman.”  *Kate*

Symptoms of early menopause may include:

- a dry vagina
- a loss/reduction of interest in sex (low libido)
- hot flushes and night sweats
- sleep disturbance
- mood changes.

The sudden start of menopause can cause more severe symptoms than natural menopause because the body hasn't had time to get used to the loss of hormones. Early menopause can also cause the bones to weaken (osteoporosis).

If your menopausal symptoms are severe, ask your doctor whether it is safe to use hormone replacement therapy (HRT). This replaces the hormones usually produced by the ovaries, and can be taken as tablets, creams or skin patches. Some women with a hormone-sensitive cancer may be advised not to take HRT.

There are also non-hormonal options, such as acupuncture, that you could try. Taking calcium and vitamin D tablets and performing some weight-bearing exercises to strengthen the bones can also relieve menopausal symptoms. Discuss the best options for your situation with your doctor.

“ It feels like menopause is discussed as a treatment side effect, not as this massive impact on who you are as a person. I'm facing menopause 20 years earlier than my friends. It's devastating. ” *Denise*



## Your feelings about early menopause

When cancer treatment causes early menopause, the impact can be dramatic. How you react may depend on your age.

If you are a young woman, experiencing menopause much earlier than you expected may affect your sense of identity or make you feel older than your age.

If you are an older woman, going through menopause earlier than you expected may

be upsetting. On the other hand, you may feel relieved to not have to worry about regular periods and unintended pregnancy. This may lead to a new-found sense of freedom, confidence or control.

You may find it difficult to start new intimate relationships after going through menopause. The *Relationships and sexuality* chapter may provide some helpful information about support (see pages 67–69).



# Women's options before cancer treatment

This chapter has information about ways a woman can preserve her fertility before starting cancer treatment. It's ideal to discuss your options with your cancer or fertility specialist at this time. See the *Talking about fertility* chapter on pages 16–18 for information.

Ask your cancer specialists how long you have to consider your options. In many cases, you can wait a week or two before starting

## Options for preserving fertility

	What this is	When this is used
Wait and see	When no methods are used to preserve fertility.	When a woman decides to leave her future fertility to chance.
Egg or embryo freezing (cryopreservation)	The process of collecting, developing and freezing eggs or embryos as part of an in-vitro fertilisation (IVF) cycle.	<p>When you want to store eggs or embryos for the future. They can be stored for many years. In some states of Australia, you will need to apply for an extension after eggs have been frozen for 20 years and embryos for 10 years.</p> <p>If you have frozen eggs, embryos or ovarian tissue, check the time limits with the fertility centre, pay any annual fees and keep your contact details up to date.</p> <p>Once you are ready to have a child, the frozen sample is sent to your fertility specialist.</p>



treatment. Be sure to understand the risks of each fertility option and keep in mind that no method works all of the time.

If you didn't have an opportunity to discuss your options before cancer treatment, you can still consider your fertility later, but there may not be as many choices available. See the *Women's options after cancer treatment* chapter on pages 33–37 for details.

How this works	Special considerations	Pregnancy rate
Requires no action.	Not known.	Depending on age and cancer treatment.
<p>Egg and embryo freezing is part of IVF – the most common and successful method for preserving a woman's fertility. See page 32 for a diagram of the IVF process.</p> <p>The cycle starts with your period, and you have an egg collection mid-cycle, usually around day 14. This is a minor procedure in an operating theatre.</p>	<p>Your specialists will plan to delay cancer treatment or stop it during IVF.</p> <p>Some women with advanced or hormone-sensitive cancer risk their cancer growing during hormone stimulation. In this case, tamoxifen, or more commonly, letrozole (anti-oestrogen drugs) may be used to prevent cancer growth. It may also be possible to skip hormone stimulation and collect a few eggs during the woman's natural ovulation cycle or early in a cycle (in-vitro maturation of oocytes). More research is being done, so talk to a fertility specialist.</p>	<p>Depending on your age, the success rate of the fertility unit, and the stage the embryos are stored at, there may be up to a 25–40% chance per cycle of an embryo developing into a pregnancy. About 10–12 mature eggs are collected during a cycle and these create an average of up to 4 embryos. Many thousands of babies have been born from mature eggs that have been frozen, and millions of babies have been born from frozen embryos. A modern technique called vitrification means that freezing eggs is equally as effective as freezing embryos. Some women prefer to freeze eggs, particularly as partners may change.</p>

## Options for preserving fertility (contd)

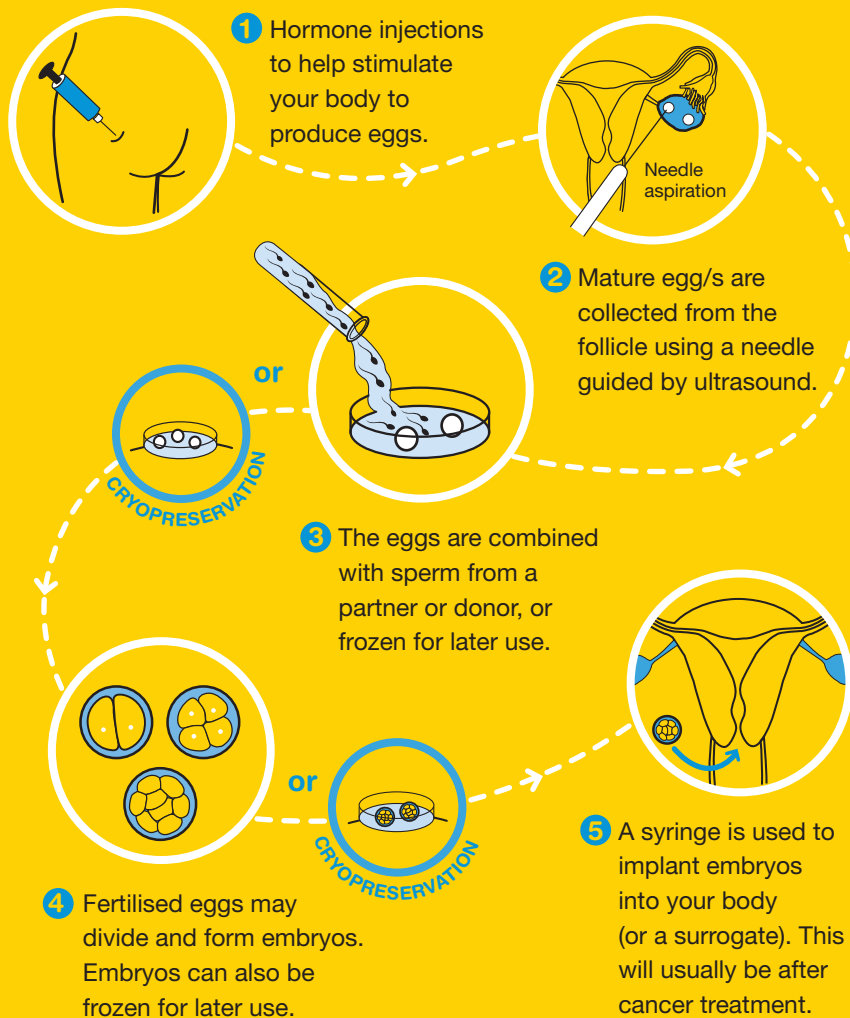
	What this is	When this is used
<b>Ovarian tissue freezing (cryopreservation)</b>	The process of removing, slicing and freezing a piece of tissue from the ovary.	If there isn't a lot of time before treatment, if hormone stimulation is unsafe, or if the patient hasn't gone through puberty.
<b>Ovarian transposition (oophoropexy)</b>	A type of fertility-sparing surgery. It involves moving one or both ovaries to preserve their function.	When the ovaries are in the path of radiotherapy treatment.
<b>Trachelectomy</b>	A type of fertility-sparing surgery. It involves removing the cervix, upper part of the vagina and lymph nodes in the pelvis to preserve reproductive organs.	For small, localised tumours in the cervix.
<b>GnRH analogue treatment</b>	Gonadotropin-releasing hormones (GnRH) are long-acting hormones used to cause temporary menopause. Reducing activity in the ovaries may protect eggs from being damaged.	During chemotherapy or pelvic radiotherapy.





How this works	Special considerations	Pregnancy rate
<p>Tissue is removed during keyhole surgery (laparoscopy). Under general anaesthetic, a small cut is made near the bellybutton to access the pelvic area. If you are having pelvic or abdominal surgery as part of your cancer treatment, it can be done during this procedure. Tissue is frozen until needed. When you are ready to conceive, the ovarian tissue slices are transplanted (grafted) back into your body. Tissue can start to produce hormones, and eggs can develop.</p>	<p>The grafts may last a relatively short time (several months to several years), so this option is usually only suitable if you are ready to try for a pregnancy soon.</p>	<p>To date, over 40 births worldwide.</p>
<p>One or both of the ovaries are moved higher in the abdomen – sometimes as high as the lowest ribs.</p>	<p>Not known. May cut off blood supply to the ovaries, causing loss of function.</p>	<p>Depends on your age, the amount of radiation that reaches the ovaries in the new position and if you start menstruating again.</p>
<p>The cervix is removed. The uterus is left in place. A stitch or band is used to partially close the uterus and work as the cervix. This opening is used for menstruation and for sperm to enter.</p>	<p>Mid-trimester miscarriage and premature delivery are more common. Women may be advised to have a stitch placed in the cervix to reduce miscarriage.</p>	<p>Possible to become pregnant after a trachelectomy.</p>
<p>Hormones are given by injection 7–10 days before cancer treatment starts or within the first week of treatment. Injections continue every 1–3 months until cancer treatment has finished.</p>	<p>May be recommended as a backup to other fertility options, such as egg or embryo cryopreservation, or as the only form of infertility protection.</p>	<p>Some studies suggest this treatment helps women under 35 but results are not yet clear.</p>

## How in-vitro fertilisation (IVF) works



*This is a simplified overview, and is not to scale.*



# Women's options after cancer treatment



Fertility options after cancer treatment may be limited. Your ability to become pregnant may depend on the effects of cancer treatment on fertility, your age and whether you have been through premature ovarian failure or early menopause (see pages 25–26).

Before trying to conceive, you may want to have your fertility checked, see the *Assessing your fertility* chapter on pages 56–57.

If you harvested and stored eggs or embryos, you may choose to use them after treatment is finished. If your ovaries are still functioning after treatment ends, it is possible to freeze eggs or embryos then.

## Natural conception

Some women are able to conceive naturally after finishing cancer treatment. This will only be possible if your body is producing eggs and you have a uterus. Your medical team will do tests to assess your fertility and will encourage you to try for a baby naturally if they think it may be possible to fall pregnant.

Women who have had chemotherapy or pelvic radiotherapy are at risk of sudden menopause, even after periods resume. If menopause is permanent, it means you will no longer be able to conceive naturally.

If you would like to try to fall pregnant naturally, speak with your cancer specialist first. You may be advised to wait between six months and two years before trying to conceive. The length of time will depend on the type of cancer and the treatment you had.

## Donor eggs and embryos

If you have ovarian failure after cancer treatment, using donor eggs or embryos may be the only way for you to try for a pregnancy. These options are available to women with a healthy uterus who can be pregnant, although there may be an age limit of about 51.

Hormones may be given to prepare your body to receive the donor egg or embryo, and until the pregnancy is viable. For this reason, women who have a hormone-sensitive cancer may not be able to carry a donor egg or embryo. If you'd like to consider other options, see the *Other paths to parenthood* chapter on page 59.

### Finding information about the donor

In Australia, laws about collecting donor information vary between states and territories. In most cases, donors are required to be open donors. This means they must provide their name, address, date of birth, medical history, including genetic test results.

By law, all donor-conceived people are entitled to access identifying information about the donor once they turn 18.

In some states and territories, a central register has been established to allow people under 18 to apply for non-identifying information about their donor parent. Other states and territories require the clinics to maintain the data.

If you'd like to use donor eggs or embryos, speak with a fertility counsellor or lawyer who can discuss the implications for donor-conceived children.



## Using donor eggs

Most IVF units in Australia have access to donor eggs. You can also ask a family member or friend to donate eggs. Regardless of where the egg comes from, the donor completes blood tests, answers questions about their genetic and medical information, and goes through a counselling process.

When the egg is removed from the donor's body, it is fertilised by your partner's sperm or donor sperm to create an embryo. After a period of quarantine, the embryo is inserted into your uterus. See pages 28–29 for more information about the general IVF process and page 32 for a diagram of how IVF works.

Egg donation is more expensive than standard IVF, as you may be paying costs related to the donor hormone stimulation process.

## Using donor embryos

If you use a donated embryo, you can become pregnant without having a genetic relationship to the baby.

Your body will be prepared for pregnancy using hormones, then a thawed embryo will be transferred into your uterus through the IVF process.

Embryo donations usually come from couples who had fertility treatments and have spare frozen embryos that they don't wish to use themselves. Embryos may be donated for ethical reasons (instead of destroying the embryos) or compassionate reasons (to help someone with infertility).



## Sophie's story

After I was diagnosed with chronic leukaemia, I still wanted to pursue fertility, so I discussed this with a fertility doctor.

For the last couple of years, I've been on a drug that has done really well for me. As the cancer has been undetectable for the last four tests, we're hoping in the next few months to stop treatment and try again with a donor embryo.

The fertility clinic couldn't really help us find donor eggs, so we went through a national egg donor organisation. We met our donor through one of their monthly get-togethers. We now have four embryos waiting for us to use.

The organisation is for people at all points in the fertility process, from just starting through to going to meetings so their children can meet other children who were made through egg donation.

The group also has an active support group forum. I learnt a lot about IVF through this forum and there's a lot of emotional support. There are quite a few people who have lost fertility due to cancer, but the majority are there due to non-cancer infertility.

Because we've been through the process a few times, I'm a little circumspect in terms of committing to thinking I'll get pregnant. I want to make sure that I do all the right things so that if it doesn't happen, I know I've tried everything.

One of the things I don't like about the situation is that I've got to do a lot of planning in case I get pregnant – what happens if I relapse, what treatments are available, would they induce early. Yet, I'm still nervous about whether I can get pregnant. The multiple goal setting has been quite difficult.



## Key points

### Fertility and cancer treatments

- Treatments may cause premature ovarian failure and/or early menopause. This could be permanent or temporary.
- Chemotherapy is drug treatment that can damage the ovaries and age them.
- Radiotherapy, given externally or internally, may damage the reproductive organs and cause infertility or future miscarriage.
- Surgery could remove the reproductive organs or cause scarring that impacts fertility.
- Other treatments, including hormone therapy, can affect fertility.
- You will be advised to avoid becoming pregnant during cancer treatment and for a period of time afterwards.

### Fertility options before cancer treatment

- In-vitro fertilisation (IVF) uses hormone stimulation to develop eggs, which are collected, fertilised (if possible) and frozen.
- Ovarian tissue is removed and frozen until needed, then it's re-implanted.
- Some operations will spare your reproductive organs.
- Hormone treatments, known as ovarian suppression, could preserve your fertility.

### Fertility options after cancer treatment

- If you have eggs, you may be able to conceive naturally. You might be advised to wait a certain period before becoming pregnant.
- If you can't use your own eggs but wish to become pregnant, you may use donor eggs or embryos. You may also consider choosing a surrogate to carry your embryo or a donor embryo for you.



# Men's fertility and cancer treatments

This chapter provides an overview of how cancer treatments affect men's fertility. The most common treatments for cancer are chemotherapy, radiotherapy, surgery and hormone therapy.

To find out more about cancer treatment, including chemotherapy, radiotherapy and surgery, call Cancer Council 13 11 20 for free booklets or visit your local Cancer Council website.

## Chemotherapy

Chemotherapy uses drugs to kill or slow the growth of cancer cells. These are called cytotoxic drugs. Chemotherapy drugs kill fast-growing cells such as cancer cells. The drugs can also affect other cells that grow quickly, such as the reproductive cells.

In men, chemotherapy may reduce or stop the production of sperm. The drugs may also affect the ability of the sperm to move up the fallopian tubes (motility) and alter the sperm's genetic make-up.

The risk of infertility depends on several factors:

- **the type of chemotherapy drug/s used** – damage to sperm production is more common with drugs in the alkylating class
- **the dose and duration of chemotherapy treatment** – this will affect how long it takes sperm production to return; in some cases, it may stop. It may start again, but this often takes several years. For some men, sperm production can take up to a decade to improve or it may be permanent.
- **your age** – less likely to recover your fertility if you are over 40.





Chemotherapy can cause permanent infertility if the cells in the testicles are too damaged to produce healthy, mature sperm again.

## Radiotherapy

Radiotherapy (also called radiation therapy) uses x-rays to kill cancer cells or damage them so they cannot grow and multiply. It can be delivered externally by external beam radiation, or given internally.

The risk of infertility depends on the area treated, the dose (measured in grays) and the number of treatments.

- External radiotherapy to the pelvic area for prostate, rectal, bladder or anal cancer and some childhood leukaemias may affect sperm production.
- Radiotherapy to the brain may damage the area that controls hormone production (pituitary gland), which affects the production of sperm and affects sex drive.
- Brachytherapy seed implants used for testicular cancer may affect sperm production, but most men recover.

### Avoiding pregnancy during treatment

Some cancer treatments, such as chemotherapy or radiotherapy, may harm an unborn baby or cause birth defects. As you might be fertile during treatment, you will need to use contraception or practise abstinence to avoid conceiving during treatment.

## Surgery

Surgery aims to remove the cancer from the body. If surgery removes part or all of a sex organ or if it removes organs in the surrounding area (such as the bladder), your ability to conceive a child will be affected.

**Removal of the testicles (orchidectomy)** – After having one testicle removed (orchidectomy), the remaining testicle will make enough sperm for you to father a child, unless the sperm is unhealthy. If the remaining testicle doesn't produce enough testosterone, you can have hormone replacement therapy (supplements) to stimulate sperm production.

In some rare cases, both testicles are removed (bilateral orchidectomy). This causes permanent infertility because you will no longer produce sperm. You will still be able to get an erection.

**Removal of the prostate (prostatectomy)** – During surgery to remove the prostate gland and seminal vesicles, the vas deferens are cut, so the semen cannot travel from the testicles to the urethra.

The impact of the operation on erections depends on the quality of your erections before surgery. You may still have erections and the pleasurable feelings of orgasm, but no longer ejaculate semen during climax (dry orgasm), or semen may go backwards towards the bladder instead of forwards (retrograde ejaculation). See the box on the next page for more details.



**Removal of lymph glands (retroperitoneal lymph node dissection or lymphadenectomy)** – Surgery for bladder, prostate or testicular cancer may damage the nerves used for getting and keeping an erection (erectile dysfunction). This may last for a short time or be permanent.

It may be possible for the surgeon to use a nerve-sparing surgical technique to protect the nerves that control erections. This works best for younger men who had good quality erections before the surgery. Problems with erections are common for 1–3 years after nerve-sparing surgery.

### Managing side effects of surgery

**Dry orgasm** – If you are experiencing a dry orgasm, you will not be able to father a child through sexual intercourse. However, it may be possible to have testicular sperm extraction (see page 44).

**Retrograde ejaculation** – To manage this side effect of surgery, you may be given medicine to contract the internal valve of the bladder. This forces the semen out of the penis, as normal,

and it may make it possible for you to conceive naturally.

**Erectile dysfunction** – Having difficulty getting and maintaining an erection is known as erectile dysfunction or impotence. Before treatment, your doctors will discuss whether you are likely to have nerve damage that causes this problem. Medicine or aids can help to restore the ability to get and keep an erection.

## Hormone therapy

Hormones that are naturally produced in the body can cause some types of cancers to grow. The aim of hormone therapy is to reduce the amount of hormones the tumour receives to help slow down the growth of the cancer.

In men, testosterone helps prostate cancer grow. Slowing the body's production of testosterone and blocking its effects may slow the growth of the cancer or even shrink it. This may cause infertility. Men with breast cancer who are taking the drug tamoxifen (an anti-oestrogen drug) may experience increased sperm production.

## Other treatments

Other treatments for cancer include stem cell transplants, immunotherapy and targeted therapies.

Stem cell transplants often require high doses of chemotherapy and, possibly, radiotherapy. This is given before the transplant to destroy cancer cells in the body and weaken the immune system so that it will not attack a donor's cells during the transplant. High-dose chemotherapy or radiotherapy can permanently affect sperm production.

The effects of immunotherapy and targeted therapies on fertility and pregnancy are not yet known. It is important to discuss your fertility options with your cancer or fertility specialist.



# Men's options before cancer treatment



This chapter has information about ways a man can preserve his fertility before starting cancer treatment. It's ideal to discuss your options with your cancer or fertility specialist at this time. See the *Talking about fertility* chapter on pages 16–18 for ways to start a conversation.

Some choices, such as sperm banking and radiation shielding, are well-established ways to preserve fertility. Others, such as testicular sperm extraction, are still being researched and may not be available to all men. The different choices depend on the type of cancer you have and your personal preferences.

Ask your cancer specialist how long you have to consider your options. In many cases, you can wait a week or two before starting cancer treatment. Fertility treatments carry some risks and your doctor should discuss these before you go ahead. Keep in mind that no method works all of the time.

If you didn't have an opportunity to discuss your options before cancer treatment, you can still consider your fertility later. Your choices after treatment will depend on whether you are able to produce sperm. See the *Men's options after cancer treatment* chapter on pages 47–51 for detailed information.

🗣️ All my life I had wanted to be a father. I didn't want cancer to ruin my chances, so I stored my sperm before treatment started. I think of this as a bit of an insurance policy. 🗣️ Zac

## Options for preserving fertility

	What this is	When this is used
<b>Sperm banking or sperm freezing (cryopreservation)</b>	<p>The freezing and storing of sperm after masturbation.</p> <p>Sperm banking is one of the easiest and most effective methods of preserving a man's fertility.</p>	<p>To delay the decision about having children, if you're not yet sure what you want.</p> <p>Samples can be stored for years, or even decades. Check the time limits with the fertility centre, pay any annual fees, and keep your contact details up to date.</p> <p>Once you are ready to start a family, the frozen sperm is sent to your fertility specialist.</p>
<b>Radiation shielding</b>	<p>Protecting the testes from external radiotherapy with a shield.</p>	<p>If the testes are close to where external radiotherapy is directed (but they are not the target of the radiation), they can be protected from the radiation beams.</p>
<b>Testicular sperm extraction</b>	<p>A method of looking for hidden sperm inside the testicular tissue. Also called surgical sperm retrieval.</p>	<p>If you don't or are unable to ejaculate or the semen ejaculated doesn't contain sperm.</p>



How this works	Special considerations
<p>The procedure is performed in hospital or in a sperm bank facility (often known as an andrology unit).</p> <p>Samples are collected in a private room where you can masturbate or have a partner sexually stimulate you, and you then ejaculate into a jar.</p> <p>Sometimes you may need to visit the clinic more than once to ensure an adequate amount of semen is collected.</p>	<p>If you live near a sperm banking facility, you may be able to collect a sample at home and deliver it to the laboratory within the hour. Sperm must be kept at room temperature during this time.</p> <p>If you are unable to get an erection or produce a sample through masturbation, other options include testicular biopsy or testicular stimulation techniques. You may be able to collect semen during sex using a special silicone condom.</p> <p>You may feel nervous and embarrassed going to a sperm bank, or worry about achieving orgasm and ejaculating. The medical staff are used to these situations. You can also bring someone with you, if you would like.</p>
<p>Protective lead coverings called shields are used.</p>	<p>This technique does not guarantee that radiation will not affect the testes, but it does provide some level of protection.</p>
<p>You will be given a general anaesthetic and a fine needle will be inserted into the epididymis or testicle to find and extract sperm. This is called testicular aspiration. Collected sperm is frozen and, when needed, used to fertilise eggs during IVF.</p>	<p>Not known at this time.</p>



## Harry's story

When I was 25, I'd been feeling quite ill – I had back pain, night sweats and weight loss. I was diagnosed with advanced Hodgkin lymphoma.

The doctors recommended I bank sperm immediately, because fertility would be an issue post-treatment. Fertility wasn't my main concern. However, my partner – now wife – and I were together at that point, so we knew it could be an issue for us down the track.

My chemotherapy regimen was aggressive, but the cancer went into remission. The chemo permanently reduced my testosterone levels. I've taken supplements for years, and I will be on them for quite some time. However, the supplements didn't restore my fertility.

Years later, my wife and I tried artificial insemination using my banked sperm. When that didn't work, we tried IVF. The first

cycle was unsuccessful. We told ourselves if a second IVF cycle didn't work, we were going to give up for a while. Being told we were pregnant was one of the happiest days of our lives.

We now have a beautiful child, and we've decided we don't want to do more IVF – it's financially and emotionally draining. Even though we have no intention of using it, my remaining sperm is still stored. We were advised to keep it until my wife reaches a certain age – I guess in case we change our minds.

At times, I've felt responsible for everything. My wife is a healthy woman and probably capable of conceiving a pregnancy naturally, but she had to go through IVF. Our son asks why he can't have a sibling. But it's something we've accepted. We feel blessed now with one child – the result was worth everything we went through.





# Men's options after cancer treatment



When cancer treatment is finished, your semen will be analysed to check the number of sperm, the quality of the sperm, and their ability to move (motility). See the *Assessing your fertility* chapter on pages 56–58 for more details.

Sometimes men who temporarily stop producing sperm recover the ability to produce it. However, if sperm production isn't restored over time, you are considered permanently infertile. You may feel a sense of loss – the information in *The emotional impact* chapter on pages 63–66 may help.

If you aren't sure what you want to do but are still fertile, you may want to consider banking some sperm. However, it is generally recommended that this is done before cancer treatment starts. Your fertility specialist will advise you about this.

## Natural conception

Your medical team might advise you to try for a baby naturally after finishing cancer treatment. Your fertility specialist will talk to you about factors to consider, including:

- if sperm counts and motility are close to normal
- the age of your partner – for example, an older woman may be less fertile.

If you would like to try to conceive naturally, speak with your cancer specialist first. You may be advised to wait six months to two years before fathering a child. The length of time depends on the type of cancer and the treatment you had.

## Intrauterine insemination (IUI)

This technique may be used if you have a low sperm count after treatment. Frozen sperm are thawed, washed and put in a sterile solution. To be used for IUI, samples must contain at least 2 million active sperm after thawing. The faster moving sperm will be separated from the slower sperm.

Once a woman is ovulating, a small, soft tube (catheter) is threaded into her uterus through the cervix to place the sperm near the fallopian tube.

If IUI is successful, fertilisation occurs and the woman will have a positive pregnancy test within a few weeks.

## Intracytoplasmic sperm injection (ICSI)

This is a specialised type of IVF. Intracytoplasmic sperm injection (ICSI) involves injecting a single sperm directly into an egg. Using IVF, an egg is extracted from a woman (see pages 28–29) and a good quality sperm is selected. The sperm is then injected into the egg. If ICSI is an option for you, the fertility specialist will provide you with more information.



Testicular sperm extraction, described on pages 44–45, may also be used after cancer treatment if you can't ejaculate or if the semen ejaculated doesn't contain sperm.



## Donor sperm

If you are infertile after cancer treatment, using donor sperm is another way to become a parent. You can access sperm in two ways:

- **known donation** – this is where the donor and recipient know each other, e.g. a friend or family member
- **clinic donation** – the recipient does not know the donor. Most fertility clinics in Australia have access to sperm, or you can find your own donor. You may also be able to use sperm from overseas. All donors have to go through the same health and counselling laws required under Australian law.

### Finding information about the donor

In Australia, laws about collecting donor information vary between states and territories. In most cases, donors are required to be open donors. This means they must provide their name, address, date of birth, medical history, including genetic test results.

All donor-conceived people are entitled to access identifying information about the donor once they turn 18.

In some states and territories, a central register has been established, allowing people under 18 to apply for non-identifying information about their donor parent. Other states and territories require the clinics to maintain the data.

If you'd like to use donor sperm, speak with a fertility counsellor or lawyer who can discuss the implications for donor-conceived children.

## Using donor sperm

Sperm donors are men who have voluntarily contributed sperm to a fertility centre. They are not paid for their donation, but may receive payment for travel or medical expenses. The men are usually between 21 and 45 years old. Personal information is collected about donors, including:

- 2–4 generations of family medical history
- details about their ethnicity, educational background, hobbies, skills and occupation
- health information, including infectious diseases status, drug use and blood type.

Samples are screened for genetic diseases or abnormalities, sexually transmitted infections (STIs) and overall quality, then quarantined for several months. Before the sperm is cleared for use, the donor is rescreened for infectious diseases. The sperm is then frozen and stored in liquid nitrogen in individual vials.

When the sperm is ready to be used, insemination is usually done in a fertility clinic. The sample is thawed to room temperature and inserted directly into the woman's uterus using the IUI process described on page 48. Before this process, the woman may be given hormones to prepare her body and increase the chances of pregnancy.



## Key points

### Fertility and cancer treatments

- Chemotherapy is drug treatment that can damage sperm. Sperm production may reduce or stop, and it can take years to resume.
- Radiotherapy, given externally or internally, may damage the reproductive organs or the pituitary gland, which makes hormones to trigger sperm production.
- Surgery to the reproductive organs or surrounding area may affect sperm production, and the ability to get an erection and ejaculate.
- Other treatments, including hormone therapy and stem cell transplants, can also have an impact on fertility.
- You will be advised to avoid conceiving during cancer treatment and for a period of time afterwards.

### Fertility options before cancer treatment

- Sperm banking involves freezing a sample for later use. It is the easiest and most effective method.
- Testicles can be shielded during radiotherapy to reduce the chance of the radiation causing harm.
- Testicular sperm extraction may look for hidden sperm inside the testicular tissue.

### Fertility options after cancer treatment

- Some men are able to conceive a child naturally. You might be advised to wait a certain period before fathering a child.
- Techniques include intrauterine insemination (IUI) or intracytoplasmic sperm injection (ICSI).
- Some men use donor sperm to conceive a child.



# Preserving fertility in children and adolescents

When a child or adolescent is diagnosed with cancer, there are many issues to consider. Often the focus is on survival, so children, teens and parents may not think about fertility. However, the majority of young people survive cancer, and fertility may become important as they reach puberty (sexual maturity) and adulthood.

Some cancer treatments do not affect a child's growing reproductive system. Others can damage a girl's ovaries, which contain eggs, or a boy's testes, which contain sperm. Sometimes this damage is temporary, but sometimes it's permanent. For a general overview of how cancer treatments affect fertility, see *Women's fertility and cancer treatments* (pages 19–27), or *Men's fertility and cancer treatments* (pages 38–42). Talk to your health care team about how your cancer treatment will affect fertility.



## Ben's story

I was diagnosed with leukaemia when I was 13. I had six weeks of chemotherapy followed by a bone marrow transplant. After this, the doctors checked my fertility and told me I was sterile.

Obviously I wasn't thinking of having kids at that age, but the possibility of not being able to made me pretty upset. It sent me into a bit of a depression spiral.

Now when I talk about my diagnosis and fertility comes up, I still get upset. It's patronising as well because a lot of people, even family members, say things like, "Oh you can still adopt." But to me, it's not the same.

I'm 20 now and I have a girlfriend. After we'd been going out for two years, I asked her if our relationship was to go any further



For an overview of ways to prevent or lower the risk of infertility, see the table on the next page. In many cases, decisions on fertility preservation need to be made before treatment begins. For young people under 18, parents will be required to consent to procedures. If the young person is old enough to understand puberty and fertility, they should be involved in the discussion.

## Resources for young people

CanTeen's resource *Maybe later baby?* provides age-appropriate information about the impact of cancer on fertility. To download a copy of the book, visit [canteen.org.au](http://canteen.org.au) and search for the resource.

You can also read information specific to children and adolescents at [futurefertility.com.au](http://futurefertility.com.au).

and we couldn't have kids, would that be an issue? She didn't seem to have a problem with it.

But I've still got that in my mind that if I do find someone and it gets to that time, and I say, "Oh, I can't have kids," they're just going to get up and go.

My brother told me recently that he was trying for a baby

and that made me feel sort of shit, but at the same time I was happy for him.

After my treatment, the doctors said they'd give me more information later, so I'm waiting to hear about my other options. There are other ways of having kids, so I've got to wait and see what happens. No point getting worked up about it yet.

**For girls** 

**Fertility options**

The options will depend on whether the girl has been through puberty. Most girls go through puberty between 9 and 15 years old.

**Before puberty**

- Undeveloped, immature eggs may be collected, matured in a laboratory, then frozen. This technique is experimental and not widely available at this stage.
- Ovarian tissue can be removed and frozen, and transplanted later when needed. This is called ovarian cryopreservation (see pages 30–31).

**After puberty**

- Mature eggs can be removed and frozen (see pages 28–29).
- Taking GnRH may reduce activity in the ovaries and protect eggs from damage (see pages 30–31).
- Hormone levels can be checked to assess fertility (see pages 56–57). It's possible for young women to be fertile, but then go through early menopause.

**Before or after puberty**

- The abdominal area can be shielded during radiotherapy to the pelvis.
- The ovaries can be surgically relocated so they are out of the radiation area (ovarian transposition, see pages 30–31). If the ovaries aren't protected, the risk of ovarian failure is higher (Premature ovarian failure, see page 25).



## For boys



The options will depend on whether the boy has been through puberty. Most boys go through puberty by the age of 13. At this stage, mature sperm is present in the semen.

- There are no proven fertility preservation methods for boys who have not gone through puberty.
- Testicular sperm extraction (see pages 44–45) is being tested on young boys. Immature sperm cells are removed, frozen and stored for later use with IVF. This technique is still experimental and not widely available at this stage.
- Sperm banking (cryopreservation) can be used to collect, freeze and store mature sperm for future use (see pages 44–45).
- Testicular sperm extraction (see pages 44–45) can remove sperm cells, which are frozen and stored for later use with IVF. This technique is still experimental and not widely available.
- The testicles can be shielded during radiotherapy to the pelvis. If this area is not protected, sperm production may be affected, which could make the boy infertile.





# Assessing your fertility

After cancer treatment, you may want to do some tests to see how your fertility has been affected. However, some people prefer not to know – it is up to you.

You may decide to wait until you feel physically and emotionally prepared to know the results – this may be months or even years later. A partner, friends, family or your medical team might provide support to you when you receive the results.

## Fertility tests for women

Your cancer or fertility specialist can talk to you about your likely fertility status after treatment, but there are no tests that can reliably predict whether you will be able to fall pregnant and if the pregnancy will be successful.

**Follicle-stimulating hormone (FSH)** – A blood test can measure FSH, which may indicate how close to menopause you are. FSH levels need to be measured on specific days of the menstrual cycle – usually the first couple of days – as levels change throughout the month.

**Transvaginal ultrasound** – An ultrasound scanner may be inserted into the vagina to examine the structure of the uterus, fallopian tubes and ovaries.

**Antral follicle count (AFC)** – A transvaginal ultrasound can be used to view the ovaries and follicles, and measure how many eggs you have. This test is done early in the menstrual cycle.

**Anti-Müllerian hormone (AMH)** – This blood test measures AMH, which is a hormone secreted by the developing egg sacs (follicles). The level of AMH in a woman's blood is an estimate of the number of eggs left in the ovaries.

**Ovarian volume** – A transvaginal ultrasound shows the volume of the ovaries. Usually the combined volume is about 10 mL. Women with small ovarian volume (less than 4 mL) often find it challenging to become pregnant.

## Fertility tests for men

After treatment, you may be able to have an erection and achieve ejaculation, but this doesn't necessarily mean you are fertile.

**Semen analysis (sperm count)** – This test can show if you are producing sperm and, if so, how many there are, how healthy they look, and how active they are.

You will go into a private room and masturbate until you ejaculate into a small container. The semen sample is sent to a laboratory for analysis. The results will help the fertility specialist determine whether you are likely to need assistance to conceive.

If you stored sperm in a sperm bank before cancer treatment, your doctor can use it as a baseline comparison to the post-treatment analysis of your sperm sample.



## If cancer genes are present

A small number of people have a greater risk of developing certain cancers, such as breast, ovarian or bowel cancer, because they carry a changed gene. You can discuss the risk of your future children inheriting a predisposition to cancer with your doctor or a genetic counsellor.

If you have a faulty gene, you may want to consider having a pre-implantation genetic diagnosis (PGD) test.

In PGD, a woman goes through the IVF cycle. While the embryos are developing in the laboratory, a few cells are removed from each embryo and tested for genetic conditions. Only unaffected embryos are implanted into the woman's uterus, increasing the chance of the faulty gene not being passed onto the child. You can discuss this option with your fertility specialist.

If you are concerned about your family history of cancer, visit a familial cancer centre for advice about the possibility of genetic testing. Usually these centres do not need a doctor's referral and can be found in most major public hospitals.

To find a familial cancer clinic, visit the Cancer Council Australia website at [cancer.org.au](http://cancer.org.au) and search for 'family cancer clinics'.



# Other paths to parenthood

Giving birth yourself or having your female partner become pregnant aren't the only ways to become a parent. This chapter talks about other paths to parenthood.

Some people decide that the options described in this chapter aren't for them. You may continue to try for a pregnancy – using the same or a different method – because you might feel strongly about bearing your own offspring.

Other people may decide not to pursue the goal of having children. See *Being child-free* on page 62.

## Surrogacy

Surrogacy is an option for women if they are unable or do not wish to carry a pregnancy. In Australia, a surrogate is a healthy female who carries a donated embryo to term. The embryo can be created from the egg and sperm of either the intended parents or a donor. The embryos are implanted into the surrogate's uterus through IVF (see page 32).

Surrogacy is a complex process for everyone involved. The fertility clinic organising it ensures that both the donor and surrogate go through several steps first, such as counselling and psychiatric testing. An ethics committee may also have to approve your case. This ensures that all parties make a well-informed decision.

If surrogacy is an option, you will need to pay the medical costs of the IVF process and any additional expenses.

## How to find a surrogate


In Australia, it is illegal to pay a surrogate for her services. For this reason, it is sometimes referred to as altruistic surrogacy. It's common for people to ask someone they know to be the surrogate. Paid surrogacy is permitted in some countries overseas. The fertility clinic will have a list of conditions the surrogate will need to meet.

This is general information about surrogacy. Laws vary around Australia and may change. Check with your local fertility clinic for the current legislation in your state or territory. It's best to consult a lawyer before entering into a surrogacy agreement.

## Adoption and fostering

Adoption and fostering may also be options for people who want to become parents:

**Adoption** – This involves taking legal parental status of a child who is not biologically yours and looking after them permanently. You may be able to adopt a child within Australia or from an overseas country.

“ I was treated for kidney cancer about 50 years ago and the radiotherapy damaged my ovaries. After I married, I tried fertility drugs but didn't have a viable pregnancy. I still wanted to be a mother, so we applied for adoption. After a five-year wait, we received my daughter at seven weeks old. She was my baby from the minute I laid eyes on her. ”  Sylvia

For more information about adoption, visit the family and community service government website in your state or territory. For a guide to overseas adoption, visit the Australian Government's website at [intercountryadoption.gov.au](http://intercountryadoption.gov.au) or call 1800 197 760.



A letter from your oncologist stating you are a cancer survivor with a good prognosis may support an application to adopt or foster a child. It is best to check with the adoption agency.

**Fostering (foster care)** – This means taking responsibility for a child without having legal parental status. Types of fostering include respite, emergency, short-term and long-term care. In Australia, there are more opportunities to foster than to adopt.

Most adoption and fostering agencies say they do not rule out adoption or fostering for cancer survivors on the basis of their medical history. However, all applicants must declare their health status. The agency may also speak directly with your doctor and require you to have a medical examination. The intention is to determine the risk of your cancer returning and your capacity to raise a child.

Applicants must also be willing to meet other criteria. The agency from your state or territory may send a representative to assess your home, and you will have a criminal record (background) check. The process depends on where you live and if the child is from Australia or overseas.



## Being child-free

After unsuccessful fertility treatment, you may come to accept that you won't have a child. You might feel like you ran out of time, money or energy to keep trying to have a child.

Not being able to have a child may cause a range of emotions, including:

- sadness or emptiness
- a sense of grief or loss
- relief, contentment or happiness
- empowerment, if you made the choice.

In some cases, people say they feel child-free and not child-less. It may be a gradual transition to accepting that you won't have a child and learning to enjoy the benefits of being child-free – more time to pursue hobbies, focus on your relationship, advance your career or afford a different lifestyle. Many people have happy and fulfilling lives without children.

Your feelings may change over time, and may depend on if you have a partner and how they feel. If you want support, a counsellor, social worker or psychologist can talk to you about being child-free and help you deal with challenging situations (for example, if your partner feels differently to you).

Not everyone wants to be a parent and this may not change over time.





## Emotional impact

How people respond to infertility varies. It's common to experience a range of emotions, and at times it may feel like you're on an emotional roller-coaster. Common reactions include shock, grief and loss, anger, anxiety or uncertainty about the future, frustration, isolation and loss of control over life direction.

These feelings may be intensified by the physical and emotional process of infertility treatment and the uncertainty of its success. Cancer survivors who didn't get a chance to think about their fertility until treatment was over say the emotions can hit hard.

For information about the impact on partner relationships and sexuality, see pages 67–69.

### Coping strategies

It's useful to consider several strategies for coping with infertility.

**Take control** – For many people, the most upsetting aspect of cancer and infertility is how it changes their plans and dreams. Not knowing what the future holds may make you feel like your life is on hold or out of control. Ways to deal with feelings of uncertainty include:

- knowing the options available to you now and in the future
- writing down what seems most important to you to guide your decision-making
- involving your partner (if you have one) in decision-making
- finding constructive ways to manage your own feelings (e.g. through activities such as art or exercise).

**Find support from family and friends** – You may feel that family and friends don't really understand what you are going through. They may not know how to communicate with you in a way that makes you feel supported.

They may make unhelpful comments such as, 'Be positive' or 'At least you're alive.' These comments may make you feel like no-one understands what you've been through. You may need to remind people that you aren't asking for advice or solutions, and that you simply want someone to listen as you express your feelings.

**Consider counselling** – Some people find it useful to talk to someone who is not their partner, family member or friend. You can see a professional counsellor alone or with a partner.

You may choose to speak to a psychologist, social worker, nurse, fertility counsellor or your doctor. This person can talk to you about issues such as:

- making difficult decisions
- the impact of cancer and infertility on your relationships
- anxiety and stress
- moral or ethical concerns
- coping with successful or unsuccessful fertility treatments
- your emotions about other people's pregnancies, births and babies
- ways to manage your feelings and share them with others.

To connect with an infertility counsellor near you, visit Access Australia at [access.org.au](http://access.org.au).

“ I am glad my doctor helped me work through the emotions of what was my top priority. I finally felt that overcoming cancer and getting on with my life were most important and everything else came after that. ” *Thuy*

**Explore peer support** – Talking to people who have been in a similar situation to you may make you feel less isolated and provide you with practical strategies to help you cope. You can access peer support by:

- joining a cancer- or fertility-related support group
- calling Cancer Council 13 11 20
- asking your health care team if you can be put in touch with a person who has been in a similar situation.

**Try relaxation and meditation exercises** – Both of these strategies can help reduce stress and anxiety.

- Relaxation usually includes muscle-loosening and slow breathing exercises to physically and mentally calm the body.
- Meditation involves focusing on a single thing, such as your breathing.
- Mindfulness meditation allows you to focus more easily on the present, rather than worrying about the past or fearing the future.

Contact Cancer Council 13 11 20 to ask for free copies of our meditation and relaxations CDs.

## When you don't want to talk about it

There may be times when you do not want to talk about the impact of cancer treatment on your fertility. This may be because you think you don't have the words to describe how you feel, you are afraid of breaking down, or you find it too overwhelming or confronting.

Some people withdraw from others to give themselves time to make sense of what's going on. If you are a private person, this might be the best way for you to process your feelings. Exploring your thoughts by writing in a journal or expressing yourself creatively can be particularly helpful if you find it difficult to talk to others.

You may want to avoid being a burden to others or fear appearing as if you are not coping. You may be specifically avoiding friends or family who are pregnant or have children because it brings up painful emotions. Give yourself permission to decline invitations to baby-focused events until you feel able to cope.

Over time and with support, you may come to terms with what you are going through and be able to open up to others. The pain of seeing your friends or family with children will lessen.

“ I used to cry my eyes out every time I saw a friend with a new baby or I heard someone in my family was pregnant. Now I genuinely feel joy and happiness for them as I celebrate their news. ” *Grace*



# Relationships and sexuality

A cancer diagnosis, treatment side effects and living with the uncertainty of infertility will probably affect your relationships and sexuality.

Whether or not you have a partner, it may be a good idea to find out your fertility status as soon as you feel ready (see pages 56–57). This way, you can reflect on what you want and/or start a conversation with a partner about what the future may hold.

## The effect on partners

Cancer, infertility and changes to your sexuality can put pressure on your relationship with a partner.

Your partner will also experience a range of emotions, which may include helplessness, frustration, fear, anger and sadness. How your relationship is affected may depend on how long you have been together, the strength of your relationship before cancer and/or infertility, and how well you communicate.

Everyone copes with infertility in their own way. Some partners are very supportive, while others avoid talking about it.

Fertility issues may become a source of unspoken tension between partners. If your partner is reluctant to participate in discussions about fertility, you might feel like you're coping alone or making all the decisions. It can also be challenging if you and your partner disagree about what to do and focus on different outcomes. See a fertility counsellor to help you cope with these issues.

## Sexuality and intimacy

Sexuality is about who you are and how you feel as a man or woman. Being able to conceive a child may be part of your sexual identity, and infertility may change what you think about yourself. You may feel that sex is linked with the stress of infertility and you may lose interest in intimacy and sex (low libido).

Some cancer treatments may cause specific physical problems, such as pain during penetrative intercourse, or erectile dysfunction. Experiencing these problems may be difficult for you and for your partner, if you have one.

Fertility issues cause some people to have a negative body image or feel that their body has ‘let them down’. It will take time to accept any physical and emotional changes. It may be helpful to:

- nurture your body with exercise, a healthy diet and sleep
- set aside some time to have a date with a partner
- think about what used to get you sexually stimulated and explore if it still does
- experiment with things like masturbation, oral sex, lubrication and sex aids (e.g. vibrators or toys)
- try to focus on enjoyment and pleasure, rather than conception
- clearly communicate your feelings or boundaries to a partner (e.g. “I just want to cuddle now” or “That feels good”).

Counselling may also help. Ask your doctor or call Cancer Council 13 11 20 for a referral to a counsellor in your local area. Our *Sexuality, Intimacy and Cancer* booklet may also be helpful – download it from your local Cancer Council website.

## Starting a new relationship

Many people deal with a cancer diagnosis and treatment without the support of a partner. After some time, you may wish to start a new relationship.

Explaining fertility issues to a potential partner or new partner may be a difficult conversation. You might worry that they won't be interested in you because you've had cancer, or because you can't have children or have chosen not to.

Start the conversation when you feel ready. You may want to talk through the scenario with a friend, family member or health professional to practise what to say and think about answers to questions your partner may ask.

### If you're a young adult

During and after cancer treatment, young people want to continue living life as normally as possible. This may include having a boyfriend or girlfriend. You may feel confused about how much to share about your cancer diagnosis and the impact on your fertility.

CanTeen offers counselling to young people aged 12–24 who have been affected by cancer. This can be in person or by phone, email or instant messaging. It also runs online forums and camps. Visit [canteen.org.au](http://canteen.org.au) or call 1800 226 833.



# Making decisions

After a cancer diagnosis, you will probably need to make several decisions about your fertility. This can be a confusing and complex process, particularly if you have several options to consider. You may feel that everything is happening too fast.

**Gather information** – Generally, people make better decisions – and have fewer regrets later – if they gather information and think about the possible consequences. Understanding your fertility options and considering the pros and cons of each option may help you make a well-informed decision.

**Get expert advice** – Ask your health professionals to explain your treatment options and the benefits and side effects of each.

**Use a decision aid** – A decision aid is designed to help you make choices about different treatment options by focusing on what matters most to you. Breast Cancer Network Australia has developed a resource called *Fertility-related choices* to help younger women with breast cancer make fertility-related decisions. Visit [bcna.org.au/resources/booklet](http://bcna.org.au/resources/booklet).

**Talk it over** – Discuss the options with those close to you, like your partner or a close friend. As most decisions will affect others in your life, it's also important to consider their opinions.

**Expect to experience doubts** – It's common to feel unsure when making tough decisions. Keeping a journal or blog about your experience may help you come to a decision and review and reflect on your feelings later.



## The main costs for fertility treatment

Fertility treatments can be expensive, and this may be a factor in your decision. Costs vary across Australia and between organisations. Ask your doctor about Medicare rebates and talk to your provider if you have private health insurance.

**Initial fertility specialist consultation and pre-treatment tests** – You need a referral from your GP or a specialist obstetrician/gynaecologist or cancer specialist to be eligible for Medicare rebates. A referral should list both you and your partner to enable you to claim the maximum benefit.

Ask the fertility specialist if they have special fees for people diagnosed with cancer, as sometimes this is the case.

**The procedure (e.g. IVF cycle/day surgery)** – The fees will depend on the procedure and whether you are a public or private patient.

There may be Medicare rebates for various IVF or

ICSI procedures, including blood tests, fertility specialist consultations and medicines. Although there is no Medicare rebate for private day surgery procedures, some rebates exist for anaesthetist services.

If procedures occur in a public hospital fertility unit, there will be no fees for either day surgery or anaesthetist services. You may, however, experience lengthy delays waiting for treatment.

**Egg, sperm and embryo storage/cryopreservation** – These may be called advanced science costs. Storage costs vary for reproductive tissue.

It may be useful to ask about up-front payments, instalment payments and annual fees.



# Useful websites

The internet has many useful resources, although not all websites are reliable. The websites listed below are good sources of support and information.

## Australian

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### General

Cancer Council Australia .....	<a href="http://cancer.org.au">cancer.org.au</a>
Cancer Australia .....	<a href="http://canceraustralia.gov.au">canceraustralia.gov.au</a>
Cancer Connections.....	<a href="http://cancerconnections.com.au">cancerconnections.com.au</a>
CanTeen .....	<a href="http://canteen.org.au">canteen.org.au</a>
Carers Australia .....	<a href="http://carersaustralia.com.au">carersaustralia.com.au</a>
Department of Health .....	<a href="http://health.gov.au">health.gov.au</a>
Department of Human Services (including Centrelink and Medicare) .....	<a href="http://humanservices.gov.au">humanservices.gov.au</a>
beyondblue.....	<a href="http://beyondblue.org.au">beyondblue.org.au</a>
healthdirect Australia.....	<a href="http://healthdirect.gov.au">healthdirect.gov.au</a>

### Fertility-related

Access Australia .....	<a href="http://access.org.au">access.org.au</a>
Adopt Change .....	<a href="http://adoptchange.org.au">adoptchange.org.au</a>
Andrology Australia .....	<a href="http://andrologyaustralia.org">andrologyaustralia.org</a>
Australian Foster Care Association .....	<a href="http://fostercare.org.au">fostercare.org.au</a>
Cancer Guidelines Wiki (type 'fertility' in the search box) .....	<a href="http://wiki.cancer.org.au">wiki.cancer.org.au</a>
Donor Conception Support Group .....	<a href="http://dcsg.org.au">dcsg.org.au</a>
Family Planning Alliance Australia .....	<a href="http://familyplanningallianceaustralia.org.au">familyplanningallianceaustralia.org.au</a>
Fertility Society of Australia.....	<a href="http://fertilitysociety.com.au">fertilitysociety.com.au</a>
Future Fertility.....	<a href="http://futurefertility.com.au">futurefertility.com.au</a>

Intercountry Adoption Australia..... [intercountryadoption.gov.au](http://intercountryadoption.gov.au)  
IVF Australia ..... [ivf.com.au](http://ivf.com.au)  
Surrogacy Australia ..... [surrogacyaustralia.org](http://surrogacyaustralia.org)

## International

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### General

American Cancer Society..... [cancer.org](http://cancer.org)  
Cancer.Net (US)..... [cancer.net](http://cancer.net)  
Cancer Research UK..... [cancerresearchuk.org](http://cancerresearchuk.org)  
Macmillan Cancer Support (UK)..... [macmillan.org.uk](http://macmillan.org.uk)  
National Cancer Institute (US)..... [cancer.gov](http://cancer.gov)

### Fertility-related

Livestrong Fertility ..... [livestrong.org/we-can-help/fertility-services](http://livestrong.org/we-can-help/fertility-services)  
MyOncofertility.org (patient education resource  
provided by Oncofertility Consortium) ..... [myoncofertility.org](http://myoncofertility.org)  
The Oncofertility Consortium ..... [oncofertility.northwestern.edu](http://oncofertility.northwestern.edu)



# Question checklist

You may find this checklist helpful when thinking about the questions you want to ask your doctor about your disease, treatment and fertility. If your doctor gives you answers that you don't understand, ask for clarification.

- Will cancer or its treatment affect my fertility? Will this be temporary or permanent?
- What fertility options do I have before treatment starts?
- What are the pros and cons of each fertility option?
- Which fertility option should I avoid and why?
- What options do I have after treatment?
- How long after treatment should I wait before trying to conceive?
- How much will preserving my fertility cost (total out-of-pocket fertility expenses)? Which parts are covered by Medicare rebates? What does my health insurance cover?
- Do I need to pay up-front before treatment begins?

## Questions for reflection

Thinking about your answers to these questions may help your decision-making. There are no right or wrong answers.

- Has cancer changed my life goals, including having a child?
- If I decide not to have a child, what has led me to this decision? Are there benefits to not having a child?
- If I have a child, is it important to me that it would be biologically related to me?
- What does my partner think?
- Which fertility option appeals to me and why?



# Glossary

## **abdomen**

The part of the body between the chest and hips, which contains the stomach, spleen, pancreas, liver, gall bladder, bowel, bladder, kidneys and some reproductive organs.

## **abstinence**

Not engaging in penetrative sexual activity.

## **adoption**

When a child is placed into the permanent care of a person who isn't their biological parent.

## **alkylating agents**

A class of chemotherapy drugs.

## **anaesthetic**

A drug that stops a person feeling pain during a medical procedure. A local anaesthetic numbs part of the body; a general anaesthetic causes a temporary loss of consciousness.

## **assisted reproductive technologies (ART)**

Procedures that help infertile couples have a baby.

## **biopsy**

Removal of a small sample of tissue from the body to help diagnosis disease.

## **bone marrow**

The soft, spongy area in the middle of bones where red and white blood cells and platelets are made.

## **cancer**

A term for a large group of diseases that have uncontrolled growth and spread of abnormal cells in the body.

## **cervix**

The end of the uterus that forms a canal and extends into the vagina.

## **chemotherapy**

The use of cytotoxic drugs to treat cancer by killing cancer cells or slowing their growth.

## **conceive**

To create an embryo by fertilising an egg.

## **contraception**

Deliberate measures to prevent pregnancy as a result of sexual intercourse (e.g. condom use).

## **cryopreservation**

A process that freezes cells, tissue, semen or other substances.

## **cystectomy**

Surgical removal of part of the bladder (partial cystectomy) or all of the bladder and surrounding lymph nodes (radical cystectomy).

## **donor egg**

An egg from another woman that is used to conceive a baby.

## **donor sperm**

Sperm from another man used to conceive a baby.

## **dry orgasm**

Sexual climax without the release of semen from the penis (ejaculation).

## **egg (ovum)**

The female cell required for reproduction.

## **egg harvesting**

The collection of eggs through the vagina, using ultrasound guidance.

**ejaculation**

When semen passes through the urethra and out of the penis during orgasm.

**embryo**

A collection of cells in the earliest stage of development (after the egg is fertilised by sperm).

**epididymal aspiration**

Inserting a needle into the epididymis under anaesthetic to extract sperm.

**epididymis**

A tube that runs from the back of each testicle through the groin region and into the abdominal cavity, and attaches to the spermatic cord. The epididymis stores immature sperm.

**erectile dysfunction**

Inability to get and keep an erection firm enough for penetration. Also called impotence.

**erection**

The stretching and stiffening of the penis in response to sexual stimulation.

**fallopian tubes**

The two thin tubes that extend from the ovaries to the uterus. The tubes carry sperm to the egg, and a fertilised egg from the ovary to the uterus.

**fertility**

The ability to conceive a child.

**fertility preservation**

Methods used to help someone retain their ability to conceive and/or carry a baby.

**fetus**

An unborn human more than eight weeks after conception.

**follicle**

A cavity in the ovary that contains a maturing egg.

**fostering**

When an adult takes responsibility for a child, but does not have legal parental status.

**gamete**

A cell that fuses with another during fertilisation (e.g. an egg or sperm).

**gonadotropin-releasing hormones (GnRH)**

Long-acting hormones used to slow and stop the function of the ovaries.

**hormone replacement therapy (HRT)**

Drug therapy that supplies the body with hormones that it is no longer able to produce naturally.

**hormones**

Chemicals in the body that send information between cells to bring about changes in the body. Some hormones control growth, others control reproduction.

**hormone therapy**

A treatment that blocks the body's natural hormones that help some cancers grow.

**hysterectomy**

The surgical removal of the uterus and the cervix.

**immunotherapy**

The prevention or treatment of disease using substances that alter the immune system's response.

**infertility**

Difficulty conceiving after trying to conceive for 12 months if under 35, or six months if over 35.

**insemination**

The deliberate injection of semen into a woman's body for the purpose of achieving conception/pregnancy.

**intracytoplasmic sperm injection (ICSI)**

An in-vitro fertilisation procedure in which a single sperm is injected directly into an egg.

**intrauterine insemination (IUI)**

Depositing sperm directly into the uterus to increase the chances of conceiving.

**in-vitro fertilisation (IVF)**

When an egg is fertilised with sperm in a laboratory and eventually implanted into a woman's body. One of the main treatments for infertility.

**laparoscopy**

Surgery done through small cuts in the abdomen using a laparoscope for viewing. Also called keyhole surgery.

**lymph nodes**

Small, bean-shaped glands that form part of the lymphatic system. They collect and destroy bacteria and viruses. Also called lymph glands.

**masturbation**

Stimulation of the genitals without sexual intercourse to reach orgasm.

**menopause**

When a woman stops having periods (menstruating). This can happen

naturally; because of chemotherapy, radiotherapy or hormone therapy; or after surgery to remove the ovaries.

**menstruation**

Having monthly periods (discharge of the lining of the uterus). This starts after a girl goes through puberty.

**motility**

The movement of sperm.

**oestrogen**

The female sex hormone produced mainly by the ovaries.

**oocyte**

An immature egg.

**oophorectomy**

The surgical removal of an ovary. If you have both ovaries removed, it is called a bilateral oophorectomy.

**oophoropexy**

The surgical relocation of one or both ovaries to another area of the body to protect ovarian function. Also called ovarian transposition.

**orchidectomy**

The surgical removal of a testicle.

**orgasm**

Sexual climax.

**ovarian suppression**

Methods to stop the functions of the ovaries.

**ovarian tissue freezing**

See cryopreservation.

**ovary**

A female reproductive organ that contains eggs (ova). It produces oestrogen and progesterone.

**ovulation**

The release of an egg during a

woman's menstrual cycle.

**ovum (plural: ova)**

A female egg that is released from an ovary at ovulation.

**pituitary gland**

A gland in the brain that produces hormones, which then control the production of sex hormones.

**pre-implantation genetic diagnosis (PGD)**

Testing embryos for specific genetic or sex-linked disorders before implantation into the woman's uterus.

**premature/early menopause**

Menopause that occurs before 40.

**premature ovarian failure**

The loss of ovarian function. This occurs when the ovaries no longer produce adequate amounts of sex hormones, and can't develop a mature egg for ovulation.

**progesterone**

A female sex hormone made mostly by the ovaries that prepares the uterus lining (endometrium) for pregnancy.

**prostate**

A gland in the male reproductive system. It produces most of the fluid that makes up semen.

**prostatectomy**

An operation to remove all or part of the prostate gland.

**puberty**

The process of reaching sexual maturity and becoming capable of reproduction.

**radiation shielding**

Protecting a part of the body from

external radiotherapy using a shield.

**radiotherapy**

The use of radiation to kill cancer cells or damage them so they cannot grow and multiply. Can be delivered externally or internally.

**retrograde ejaculation**

A condition where the sperm travels backwards into the bladder instead of forwards out of the penis.

**scrotum**

The external pouch of skin behind the penis containing the testicles.

**semen**

The fluid containing sperm and secretions from the testicles and seminal vesicles that is ejaculated from the penis during orgasm.

**seminal vesicles**

Glands that lie near the prostate and produce part of the semen.

**sperm**

The male sex cell. It is made in the testicles.

**sperm banking**

See cryopreservation.

**stem cell**

An immature cell from which blood cells are formed. Found in the bone marrow.

**stem cell transplant**

A treatment in which diseased blood cells are destroyed by high-dose chemotherapy or radiotherapy, then replaced by healthy stem cells.

**surrogacy**

When another woman (a surrogate) carries a child and gives birth on behalf of someone else.



**tamoxifen**

An anti-oestrogen drug used to treat breast cancer.

**targeted therapy**

Treatment that attacks specific weaknesses of cancer cells while minimising harm to healthy cells.

**testes**

See testicles.

**testicles**

The egg-shaped glands that produce sperm and the male sex hormone testosterone. Also called testes.

**testicular sperm extraction**

Surgically removing sperm from testicular tissue.

**testosterone**

The major male sex hormone. In men, it is produced by the testicles and also by the adrenal glands. In women, the ovaries and adrenal glands produce small amounts of testosterone.

**trachelectomy**

Surgical removal of the cervix.

**transvaginal ultrasound**

A test that uses soundwaves to create pictures of the uterus, ovaries and other female reproductive organs.

**ultrasound**

A non-invasive scan that uses soundwaves to create a picture of part of the body.

**uterus**

The hollow organ in which a fertilised egg grows and a fetus is nourished until birth. Also called the womb.

**vagina**

The passage leading from the vulva to the uterus in females.

**vas deferens**

Tubes in the male reproductive system that carry the sperm from the testicles to the prostate.

**vulva**

The external sexual organs of a woman.

**Can't find a word here?**

For more cancer-related words, visit:

- [cancercouncil.com.au/words](http://cancercouncil.com.au/words)
- [cancervic.org.au/glossary](http://cancervic.org.au/glossary)
- [cancersa.org.au/glossary](http://cancersa.org.au/glossary)

**References**

1. AYA cancer fertility preservation guidance working group, *Fertility preservation for AYAs diagnosed with cancer: Guidance for health professionals*, Cancer Council Australia, Sydney [Viewed 10 May 2016.] Available from: [wiki.cancer.org.au/australia/COSA:AYA\\_cancer\\_fertility\\_preservation](http://wiki.cancer.org.au/australia/COSA:AYA_cancer_fertility_preservation).
2. A Clark, *National Fertility Study 2006: Australians' experience and knowledge of fertility issues*. [Viewed 10 May 2016.] Available from: [fertilitysociety.com.au/wp-content/uploads/preservation-of-fertility-presentation-2006.ppt#1](http://fertilitysociety.com.au/wp-content/uploads/preservation-of-fertility-presentation-2006.ppt#1).



# How you can help

At Cancer Council, we're dedicated to improving cancer control. As well as funding millions of dollars in cancer research every year, we advocate for the highest quality care for cancer patients and their families. We create cancer-smart communities by educating people about cancer, its prevention and early detection. We offer a range of practical and support services for people and families affected by cancer. All these programs would not be possible without community support, great and small.

**Join a Cancer Council event:** Join one of our community fundraising events such as Daffodil Day, Australia's Biggest Morning Tea, Relay For Life, Girls' Night In and Pink Ribbon Day, or hold your own fundraiser or become a volunteer.

**Make a donation:** Any gift, large or small, makes a meaningful contribution to our work in supporting people with cancer and their families now and in the future.

**Buy Cancer Council sun protection products:** Every purchase helps you prevent cancer and contribute financially to our goals.

**Help us speak out for a cancer-smart community:** We are a leading advocate for cancer prevention and improved patient services. You can help us speak out on important cancer issues and help us improve cancer awareness by living and promoting a cancer-smart lifestyle.

**Join a research study:** Cancer Council funds and carries out research investigating the causes, management, outcomes and impacts of different cancers. You may be able to join a study.

To find out more about how you, your family and friends can help, please call your local Cancer Council.



# Cancer Council 13 11 20

Being diagnosed with cancer can be overwhelming. At Cancer Council, we understand it isn't just about the treatment or prognosis. Having cancer affects the way you live, work and think. It can also affect our most important relationships.

When disruption and change happen in our lives, talking to someone who understands can make a big difference. Cancer Council has been providing information and support to people affected by cancer for over 50 years.

Calling 13 11 20 gives you access to trustworthy information that is relevant to you. Our cancer nurses are available to answer your questions and link you to services in your area, such as transport, accommodation and home help. We can also help with other matters, such as legal and financial advice.

If you are finding it hard to navigate through the health care system, or just need someone to listen to your immediate concerns, call 13 11 20 and find out how we can support you, your family and friends.

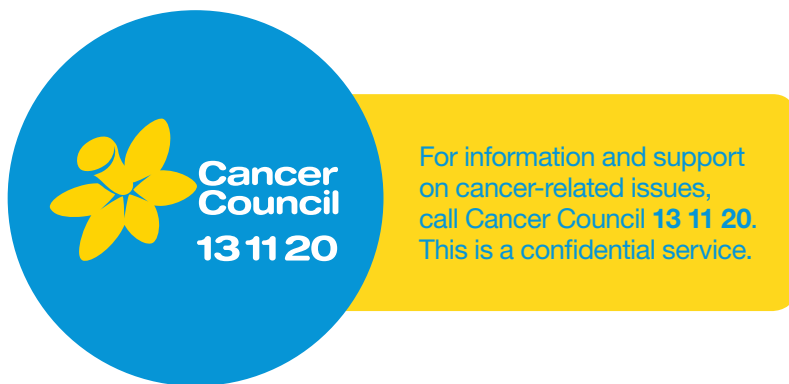
Cancer Council services and programs vary in each area.  
13 11 20 is charged at a local call rate throughout Australia (except from mobiles).



**If you need information in a language other than English, an interpreting service is available. Call 13 14 50.**



**If you are deaf, or have a hearing or speech impairment, contact us through the National Relay Service.**  
[www.relayservice.gov.au](http://www.relayservice.gov.au)



## Visit your local Cancer Council website

**Cancer Council ACT**  
actcancer.org

**Cancer Council NSW**  
cancercouncil.com.au

**Cancer Council NT**  
nt.cancer.org.au

**Cancer Council Queensland**  
cancerqld.org.au

**Cancer Council SA**  
cancersa.org.au

**Cancer Council Tasmania**  
cancertas.org.au

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cancervic.org.au

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cancerwa.asn.au

**Cancer Council Australia**  
cancer.org.au

*This booklet is funded through the generosity of the people of Australia.  
To support Cancer Council, call your local Cancer Council or visit your local website.*