



# 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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### 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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# About this booklet

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 you may be able to preserve your fertility before treatment and protect it during treatment. We also 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 Clinical Oncology Society of Australia's (COSA) 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. You can also visit your local Cancer Council website (see back cover).



**Cancer  
Council**  
**13 11 20**

# Contents

<b>Reproduction and fertility</b> .....	<b>4</b>
Factors that affect fertility.....	4
What is infertility? .....	4
How reproduction works .....	5
The female reproductive system .....	6
The male reproductive system .....	8
<b>Key questions</b> .....	<b>10</b>
How does cancer affect fertility?.....	10
How does age affect fertility after cancer? .....	11
Should I have a child after I've had cancer? .....	12
How long should I wait to conceive after treatment?.....	12
Will having children cause the cancer to come back? .....	13
If I've had cancer, will my children get cancer? .....	13
What if I was already pregnant at diagnosis? .....	14
<b>Making decisions</b> .....	<b>15</b>
Talking about fertility.....	15
Which health professionals will I see? .....	16
The main costs of fertility treatment.....	18
<b>For women</b>	
<b>Women's fertility and cancer treatments</b> .....	<b>19</b>
Chemotherapy.....	19
Radiation therapy .....	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
Radiation therapy .....	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 fertility after treatment</b> .....	<b>57</b>
<b>Other paths to parenthood</b> .....	<b>61</b>
Surrogacy .....	61
Adoption and fostering.....	62
<b>Being child-free</b> .....	<b>64</b>
<b>Emotional impact</b> .....	<b>65</b>
When you don't want to talk about it .....	68
<b>Relationships and sexuality</b> .....	<b>69</b>
The effect on partners.....	69
Sexuality and intimacy .....	70
Starting a new relationship.....	71
<b>Useful websites</b> .....	<b>72</b>
<b>Question checklist</b> .....	<b>74</b>
<b>Glossary</b> .....	<b>75</b>



# Reproduction and fertility

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

## Factors that affect fertility

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

- **age** – fertility naturally declines with age (see page 11)
- **weight** – being significantly underweight or overweight
- **smoking** – active and passive smoking can harm reproductive health
- **other health issues** – endometriosis, fibroids, pelvic disease, certain hormone conditions or cancer.

For more information about how cancer affects fertility, see the *Key questions* chapter on pages 10–14.

### 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 more common than many people realise – it affects one in six Australian couples.<sup>2</sup> Many couples find it hard to come to terms with infertility. For more information about how infertility can affect emotional health and relationships, see pages 65–71.

## How reproduction works

The female and male reproductive systems work together to make a baby. The process involves two kinds of sex cells called gametes: the female gamete – the egg or ovum – and the male gamete – the sperm.

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

Ovulation and sperm production are controlled by hormones, which are chemical messengers that help the body work properly. In females, the pituitary gland in the brain releases hormones that stimulate the ovaries to make the hormones oestrogen and progesterone, and to release eggs. In males, the pituitary gland also stimulates the testicles to make the hormone testosterone and sperm.

**Pregnancy** – 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 sexual climax (orgasm). After the egg is fertilised by the sperm, it's called an embryo. The embryo then becomes implanted in the lining of the uterus (endometrium). If the egg is not fertilised, women have a period (menstruation).

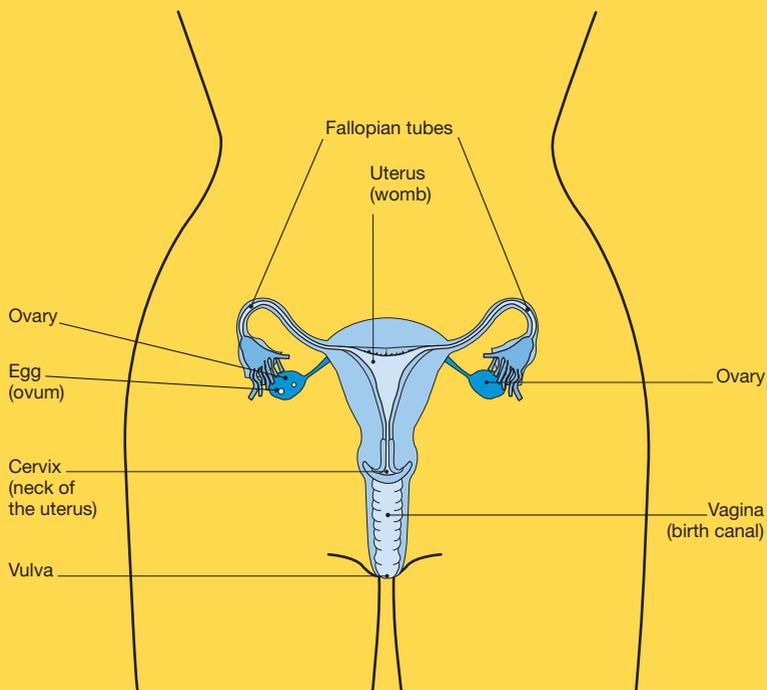
**Menopause** – Women usually menstruate until the age of 45–55, when monthly periods stop. This is called menopause and it happens because over time the number of eggs in the ovaries declines, and the ovaries stop producing hormones. This is the natural end of a woman's reproductive years. If menopause 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 (ova). 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 uterus)** – 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 external part of a woman's sex organs.

## The female reproductive system

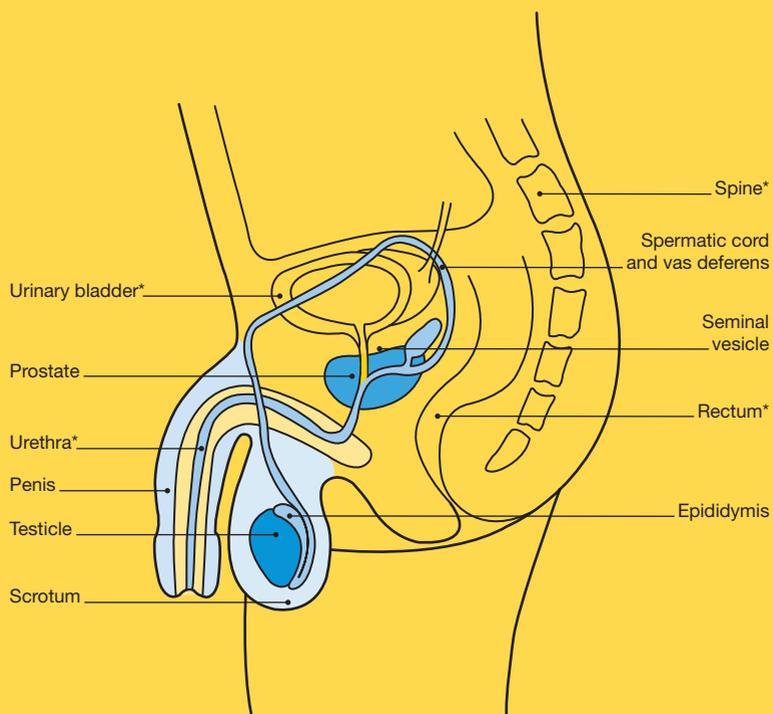


## The male reproductive system

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

- **testicles** – also called testes, 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
- **epididymis** – coiled tubes attached to the outer surface of the testicles. The immature sperm travel from each testicle to the epididymis, where they mature
- **spermatic cord 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 cancer treatments may damage the ovaries and decrease the number of available eggs. Hormone production between the brain and the ovaries may also be affected. Surgery, radiation therapy and chemotherapy to treat cancer may damage reproductive organs. For further details, see *Women's fertility and cancer treatments* on pages 19–27.

**Men** – Some cancer treatments may affect sperm quantity (low numbers of sperm are made), quality (the sperm that are made do not work properly) or motility (the sperm move poorly). Sometimes the testicles also become damaged or other reproductive organs are removed during surgery. 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 me the chance to become parents.”  Craig

## 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.

**Women's age and fertility** – Women are born with all the eggs they will have in their lifetime, but as women age, the number of eggs reduces. Fertility starts to decline after 30 and the decline speeds up after 35. It then becomes harder to conceive and the risk of genetic abnormality in the baby increases.

The impact of cancer treatments can vary with age. Before puberty, the ovaries are more protected from chemotherapy or radiation therapy, although the effect of these treatments on fertility can range from mild to severe, depending on the drugs used and the dose. High doses may sometimes cause enough damage to the ovaries that both the onset of puberty and future fertility are affected. After puberty, the ovaries are more sensitive to the effects of both chemotherapy and radiation therapy, and the risks increase 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 and after puberty, chemotherapy and radiation therapy may affect sperm production and may cause infertility. The effect of radiation will depend on where the radiation is given and dose.

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

**A:** This is a very personal decision. A cancer diagnosis may 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. See *Useful websites* on pages 72–73 for more information.

“ 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, and to ensure you remain in good health during this time. It's best to discuss the timing with your doctor.

For some fertility treatments, you will need to take extra hormones or stimulate your hormones. 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: 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.

To find out more 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 people who don't have children after treatment.

## Q: If I've had cancer, will my children get cancer?

**A:** 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. However, a small percentage of certain cancers (up to 5%) are due to an inherited faulty gene from either the mother or father. This is known as familial cancer. The faulty gene increases the risk of cancer, but even then it does not mean that a child will inherit the gene and develop cancer. For more information, see *If cancer genes are present* on page 60.

A genetic counsellor is the most qualified person to give you up-to-date information about the genetic risks of cancers for family members.

“ 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

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

**A:** Being diagnosed with cancer during pregnancy is uncommon – it is estimated that one in every 1000 pregnant women is diagnosed with cancer.

It may still be possible to have cancer treatment during pregnancy. It's best to discuss the potential risks and benefits with your oncologist before treatment begins. In some cases, 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 weeks of pregnancy decide to terminate the pregnancy so they can start treatment immediately, while others who are diagnosed later in the pregnancy choose to deliver before the due date.

You will be advised not to breastfeed during chemotherapy as drugs can be passed to the baby through the breastmilk. It may not be possible to breastfeed during other treatments. For support, call the Australian Breastfeeding Association on 1800 686 268.



# Making decisions

## Talking about fertility

It's best to talk about ways to preserve or protect your fertility before cancer treatment begins.

Fertility is something your treatment team should discuss with you, but you can also bring up the topic yourself. See page 74 for suggested questions to ask.

Some people feel too overwhelmed by the amount of cancer information they are given at diagnosis to think about fertility. Or you may need to make fertility decisions before you've given much thought to whether you want to have a child in the future.

Even if you think, "But I don't want kids anyway" or "My family is complete", a fertility specialist or counsellor will probably encourage you to consider as many fertility options as possible to keep your choices open for the future. These decisions are personal, and no decision is right or wrong. The section in this chapter about making decisions may be helpful (see page 16).

If you aren't offered the opportunity to see a fertility specialist before treatment, ask your GP or cancer specialist for a referral.

🗨️ 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*

## What to consider when 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.



### Understand the available options

Generally, people make decisions they are comfortable with – and have fewer regrets later – if they gather information and think about the possible consequences. Consider the pros and cons of each option to help you make a well-informed decision.

### 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 reflect on your feelings.



### Get advice

Ask your health professionals to explain your treatment options, and the benefits and side effects of each.



### 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.

### Use a decision aid

A decision aid can 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/booklets-and-fact-sheets](http://bcna.org.au/resources/booklets-and-fact-sheets).

## Which health professionals will I see?

There are several people you may see to discuss fertility, including:

- **fertility specialist** – doctor who has experience managing fertility issues
- **reproductive endocrinologist** – doctor who has completed additional training in the diagnosis and treatment of infertility
- **paediatric gynaecologist, endocrinologist, surgeons** – specialise in hormones and fertility care of children with cancer
- **fertility counsellor** – counsellor who provides advice for people who are experiencing fertility issues
- **genetic counsellor** – counsellor who provides advice for people with a strong family history of cancer or with a genetic condition linked to cancer.

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 outline the options available to you. Your cancer specialist will make suggestions, 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. You may also wish to bring a family member or friend for support.

Some people find talking to a fertility specialist stressful. It may help to plan some questions in advance and to take notes during the discussion. The information in this booklet about dealing with emotional issues may also be helpful (see pages 65–71).

## The main costs of fertility treatment

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

### **Initial fertility specialist consultation and pre-treatment tests**

– You need a referral from your GP, cancer specialist or a specialist obstetrician/gynaecologist 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.

As a private patient, there may be Medicare rebates for some 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 procedures, day surgery or anaesthetist services. You may, however, experience long delays waiting for treatment.

**Egg, sperm and embryo storage/cryopreservation** – These may be called advanced science costs. Storage costs vary for reproductive tissue. Ask your fertility specialist about up-front payments, instalment payments and annual fees.



# 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, radiation therapy, surgery and hormone therapy. Other treatments include immunotherapy and targeted therapy.

To find out more about chemotherapy, radiation therapy 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 and they are designed to affect fast-growing cells such as cancer cells. This means they can also damage 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 times
- **your age** – the number and quality of eggs start to decline naturally as a woman gets older (see page 11).

Chemotherapy can 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 25–27.



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.



If you are treated with both chemotherapy and radiation therapy, the risk of infertility is higher.

## Radiation therapy

Radiation therapy (also called radiotherapy) 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 vary depending on the area treated and the dose of the radiation therapy.

- External or internal radiation therapy to the pelvic area (for cancer of the rectum, bladder, cervix or vagina) can stop the ovaries producing hormones. This results in temporary or permanent menopause.
- Treatment to the pelvic area can increase the risk of miscarriage, premature birth and low birth weight.
- Radiation therapy to the brain may damage the pituitary gland, which releases hormones that stimulate the ovaries to release an egg each month.



## 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 and cervix (hysterectomy)** – This 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 you haven't already been through menopause, you will experience early menopause. You will no longer have periods or be able to become pregnant naturally.

**Removal of the whole bladder (radical cystectomy)** – If bladder cancer has spread to the abdominal area, the urethra, uterus, ovaries, fallopian tubes and a part of the vagina are often 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 of surgery

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 pages 30–31 for more information on fertility-sparing techniques such as ovarian transposition (oophoropexy) and trachelectomy.

## 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 on 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 hormones that are required for fertility, so you will have to wait 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

Stem cell transplants, immunotherapy and targeted therapy are other ways of treating cancer.

Stem cell transplants often require high doses of chemotherapy and, possibly, radiation therapy. These are 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. The risk of infertility after high-dose chemotherapy or radiation therapy is high.

The effects of immunotherapy and targeted therapy on fertility and pregnancy are not yet fully understood. Early research suggests some targeted therapy drugs can cause early menopause (see page 25).

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 radiation therapy, can harm an unborn baby or cause birth defects.

As you might be fertile during cancer treatment, you will need to use some form of contraception to avoid pregnancy at this time.

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 said we should be thinking about fertility if I wanted to have children in the future. It felt quite abrupt to just start thinking about it, but necessary.

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 were 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

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

### Acute ovarian failure

During treatment, and for some time afterwards, the ovaries often stop producing hormones because of the damage caused by the cancer treatment. This is known as acute ovarian failure. It is often temporary, and you will have occasional or no periods, and symptoms similar to menopause (see next page). If ovarian failure continues for a number of years, it is less likely that your ovaries will work normally again.

### Early menopause

Menopause before the age of 40 is known as early menopause or premature ovarian insufficiency (POI). This is when you stop having menstrual periods because egg numbers are very low.

The eggs may have been destroyed or damaged by treatment. If too many eggs are damaged during treatment, menopause is permanent. Early menopause could occur immediately or many years after treatment depending on your age, type of treatment and dose.

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. A small number of women with POI (5–10%) have a chance of becoming pregnant naturally, because in some rare cases, a remaining egg may mature and be fertilised by a sperm.

“ 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. ” Denise

Symptoms of early menopause may include:

- a dry or tight vagina
- a loss/reduction of interest in sex (low libido)
- hot flushes and night sweats
- pain in joints
- problems falling asleep and staying asleep
- feeling more anxious or overwhelmed.

The symptoms are usually more severe when menopause starts suddenly, because the body hasn’t had time to get used to the gradual decrease in hormone levels.

There are various ways to manage the symptoms of menopause.

Early menopause can also cause the bones to weaken (osteoporosis). Talk to your doctor about having a bone density test or taking medicines to prevent your bones weakening. Osteoporosis Australia has more information – call 1800 242 141 or visit [osteoporosis.org.au](http://osteoporosis.org.au).

Talk to your doctor about the benefits and risks of hormone replacement therapy (HRT). This replaces the hormones usually produced by the ovaries, and can be taken as tablets, creams or skin patches.



Taking HRT containing oestrogen may increase the risk of some diseases. Ask your doctor whether it is safe to use. Some women with a hormone-sensitive cancer may be advised not to take HRT. Vaginal moisturisers available over the counter can help with vaginal discomfort and dryness.

Non-hormonal options, such as acupuncture, can also help. Taking calcium and vitamin D tablets, and performing some weight-bearing exercises to strengthen the bones, can relieve some menopausal symptoms. Exercise can also help with mood changes and energy levels, and will help keep your bones strong. Discuss the best options for your situation with your doctor.

### Your feelings about early menopause

When cancer treatment causes early menopause, the impact on your emotions, body image and relationships can be significant.

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 or peers.

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

But some older women say they feel relieved to not have to worry about regular periods.

You may find it difficult to start new intimate relationships after going through menopause. See the *Relationships and sexuality* chapter for information (see pages 69–71).

It may take time to accept the changes you're experiencing. Talking to a family member, friend or counsellor may help.



# 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 the options with your cancer or fertility specialist at this time. See the *Making decisions* chapter on pages 15–18 for information.

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

## Options for preserving fertility in women

	What this is	When this is used
<b>Wait and see</b>	When no method is used to preserve fertility.	When a woman decides to leave her future fertility to chance.
<b>Egg or embryo freezing (cryopreservation)</b>	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 (see next page), check the time limits with the fertility clinic, 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 33–36 for details.

How this works	Other 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>	Your cancer specialists will plan cancer treatment to give you time to have IVF.	Depending on age, the success rate of the fertility clinic, and the stage the embryos are stored at, there may be a 25–40% chance per cycle of an embryo developing into a pregnancy. 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 they may change partners later.

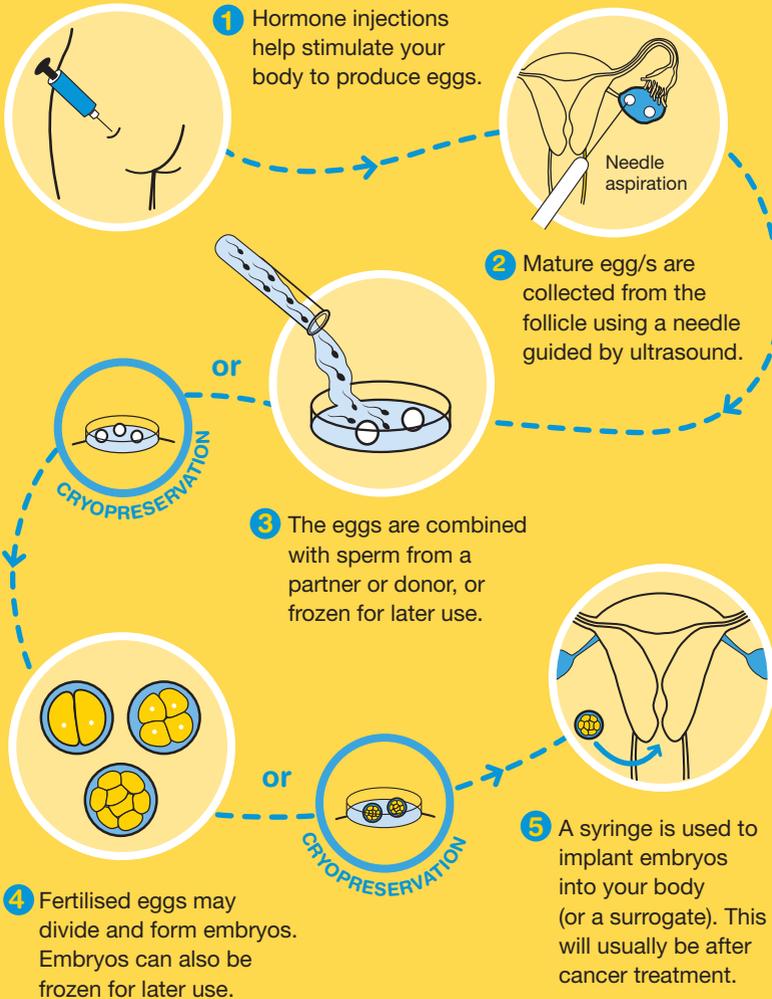
## Options for preserving fertility in women (continued)

	What this is	When this is used
<b>Ovarian tissue freezing</b> (cryopreservation)	The process of removing, slicing and freezing tiny pieces of tissue from an ovary for later use.	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</b> (oophoropexy)	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 radiation therapy.
<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 but preserving reproductive organs.	For small, localised tumours in the cervix.
<b>GnRH analogue treatment</b> (ovarian suppression)	Gonadotropin-releasing hormone (GnRH) is a long-acting hormone used to cause temporary menopause. Reducing activity in the ovaries may protect eggs from being damaged.	During chemotherapy or pelvic radiation therapy.



How this works	Other 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, the tissue can be removed at this time. 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>Considered experimental.</p> <p>There is a risk that storing tissue before treatment begins means it will contain cancer cells. This risk is higher for people with leukaemia. It's important to discuss this risk with your doctor.</p>	<p>To date, approximately 100 births worldwide from ovarian tissue removed after puberty.</p>
<p>One or both of the ovaries are moved higher in the abdomen – sometimes as high as the lowest ribs – to lower the amount of radiation your ovaries receive.</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, and if you start menstruating again.</p>
<p>The cervix is partially or completely removed, but the uterus is left in place and is stitched partially closed. 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 what remains of the cervix to reduce miscarriage.</p>	<p>It is 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 freezing, or as the only form of fertility protection.</p>	<p>Studies suggest this treatment may help women under 35.</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 insufficiency or early menopause (see pages 25–27).

Before trying to conceive, you may want to have your fertility checked. See the *Assessing fertility after treatment* chapter on pages 57–60.

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 radiation therapy 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 premature ovarian insufficiency 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.

There are several steps to this process. The first involves taking hormones to prepare the lining of your uterus to receive the donor egg or embryo, and then 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 pages 61–63.

### Finding information about the donor

In Australia, clinics can only use eggs and embryos from donors who agree that people born from their donation can find out who they are. This means that the name, address and date of birth of donors are recorded.

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

In some states, a central register is used to record details about donors and their donor-

conceived offspring. Parents of donor-conceived children, and donor-conceived people who are over the age of 18, can apply for information about the donor through these registers. In other states and territories, people who want information about their donor can ask the clinic where they had treatment.

If you'd like to use donor eggs or embryos, discuss the possible issues for donor-conceived children with a fertility counsellor.



## 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 have gone through 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 about women and fertility

### Fertility and cancer treatments

- Treatments may cause acute ovarian failure, permanently or temporarily, or premature ovarian insufficiency (early menopause), which is permanent.
- Chemotherapy is drug treatment that can damage the eggs in the ovaries.
- Radiation therapy, 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.
- 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 or embryos, which are collected, fertilised (if possible) and frozen.
- Ovarian tissue is removed and frozen until needed, and then it's re-implanted. There have been over 100 births to date.
- Some operations will spare your reproductive organs.
- Hormone treatments, known as ovarian suppression, may help to protect your fertility.

### Fertility options after cancer treatment

- If you have eggs and a uterus, you may be able to conceive naturally.
- If you can't use your own eggs, 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, radiation therapy, surgery and hormone therapy.

To find out more about cancer treatment, including chemotherapy, radiation therapy 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 and they are designed to affect fast-growing cells, such as cancer cells. This means they 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 drugs 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 to normal. In some cases, sperm production may stop. It may start again, but this often takes several years. For some men, the changes to sperm production can be permanent
- **your age** – you are less likely to recover 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.

## Radiation therapy

Radiation therapy (also called radiotherapy) 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 vary depending on the area treated, the dose and the number of treatments.

- External radiation therapy to the pelvic area (for prostate, rectal, bladder or anal cancer and some childhood leukaemias) may affect sperm production.
- Radiation therapy to the brain may damage the pituitary gland, which affects the production of sperm and affects sex drive.
- Brachytherapy seed implants used for testicular and prostate cancers may affect sperm production, but many men recover.

### Avoiding pregnancy during treatment

Some cancer treatments, such as chemotherapy or radiation therapy, may affect sperm and 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 help make more sperm.

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. You will still feel the muscular spasms and pleasure that accompany an orgasm, but you will not ejaculate during climax (dry orgasm).

The prostate lies close to nerves and blood vessels that are important for getting erections. These may be damaged during surgery, but the impact on erections depends on the quality of your erections before surgery. In some cases, semen may go backwards towards the bladder instead of forwards (retrograde ejaculation).

See the box on the opposite 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. However, problems with erections are common for 1–3 years after nerve-sparing surgery.

### Managing side effects of surgery

**Dry orgasm** – If you are experiencing 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 pages 44–45).

**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.

**Erection problems** – Difficulty getting or maintaining an erection is known as erectile dysfunction or impotence. Before surgery, your doctor will discuss whether you are likely to have nerve damage that causes this problem. Medicine or aids can help improve problems. Couples may also experiment with types of sexual pleasure that don't need penetration, such as oral sex, masturbation or sensuous massage.

› See our *Sexuality, Intimacy and Cancer* booklet.

## 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 therapy.

Stem cell transplants often require high doses of chemotherapy and, possibly, radiation therapy. 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 radiation therapy can permanently affect sperm production.

The effects of immunotherapy and targeted therapy 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 the options with your cancer or fertility specialist at this time. See the *Making decisions* chapter on pages 15–18 for more details.

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 47–50 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 in men

	What this is	When this is used
<p><b>Sperm banking or sperm freezing</b> (cryopreservation)</p>	<p>The freezing and storing of sperm.</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 clinic, 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>
<p><b>Radiation shielding</b></p>	<p>Protecting the testicles from external radiation therapy with a shield.</p>	<p>If the testicles are close to where external radiation therapy is directed (but are not the target of the radiation), they can be protected from the radiation beams.</p>
<p><b>Testicular sperm extraction (TESE)</b></p>	<p>A method of looking for 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

The procedure is performed in hospital or in a sperm bank facility (often known as an andrology unit).

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.

Sometimes you may need to visit the clinic more than once to ensure an adequate amount of semen is collected.

Protective lead coverings called shields are used.

You will be given a general anaesthetic and a fine needle will be inserted into the epididymis (see page 8) or testicle to find and extract sperm. This is called testicular aspiration. Collected sperm is frozen and can later be used to fertilise eggs during IVF.

## Other considerations

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.

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.

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.

This technique does not guarantee that radiation will not affect the testicles, but it does provide some level of protection.



## 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.

I banked sperm the week before chemotherapy even started. 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. We found

the process emotionally and financially draining. 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 brother or sister. 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 fertility after treatment* chapter on pages 57–60 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 65–68 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)

Also called artificial insemination, 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, the sperm are inserted into her uterus through the cervix using a small, soft tube (catheter). The procedure takes only a few minutes and may cause some mild discomfort.

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. In intracytoplasmic sperm injection (ICSI), a single sperm is injected 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. A fertility specialist can provide you with more information.



Testicular sperm extraction, described on pages 44–45, may also be an option 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, clinics can only use sperm from donors who agree that people born from their donation can find out who they are. This means that the name, address and date of birth of donors are recorded.

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

In some states, a central register records details about donors and

their donor-conceived offspring. Parents of donor-conceived children, and donor-conceived people who are over the age of 18, can apply for information about the donor through these registers. In other states and territories, people who want information about their donor can ask the clinic where they had treatment.

If you'd like to use donor sperm, discuss the possible issues for donor-conceived children with a fertility counsellor.

## Using donor sperm

Sperm donors are men who have voluntarily contributed sperm to a fertility clinic. 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 containers.

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 about men and fertility

### Fertility and cancer treatments

- Chemotherapy is drug treatment that can reduce or stop sperm production, which can take years to return to normal.
- Radiation therapy, given externally or internally, may damage the reproductive organs or the pituitary gland, which makes hormones to trigger sperm production.
- Surgery to reproductive organs or nearby areas may affect sperm production, and the ability to get an erection and ejaculate.
- 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 radiation therapy to reduce the chance of the radiation causing harm.
- Testicular sperm extraction may look for 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 reproductive system. Others can damage a girl's ovaries, which contain eggs, or a boy's testicles, which make 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). You can also talk to the health care team about how cancer treatment will affect fertility.

For an overview of ways to prevent or lower the risk of infertility, see the tables on pages 54–55. Some of these procedures are experimental and available only in specialised centres. In many cases, decisions about fertility preservation are made before treatment begins. This is a difficult time, and often the decision involves a multidisciplinary team of specialists, parents of the young person and the young person.

## 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).



## 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 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 it 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



<b>Fertility options</b>	The options will depend on whether the girl has been through puberty. Most girls go through puberty between 9 and 12 years of age.
<b>Before puberty</b>	<ul style="list-style-type: none"><li>• Ovarian tissue can be removed and frozen, and transplanted later when needed. This is called ovarian cryopreservation (see pages 30–31). The ovarian tissue contains underdeveloped immature eggs. Experiments are being done to mature the eggs in a laboratory before freezing, but this technique is under development and not widely available. There has only been one birth worldwide for ovarian tissue removed before puberty.</li></ul>
<b>After puberty</b>	<ul style="list-style-type: none"><li>• Mature eggs can be removed and frozen (see table, pages 28–29).</li><li>• Taking a long-acting hormone called GnRH may reduce activity in the ovaries or ovarian tissue and protect eggs from damage (see pages 30–31).</li><li>• Hormone levels can be checked to assess fertility (see pages 57–58). It's possible for young women to be fertile, but then go through early menopause.</li></ul>
<b>Before or after puberty</b>	<ul style="list-style-type: none"><li>• The abdominal area can be shielded during radiation therapy to the pelvis.</li><li>• 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 insufficiency, see page 25).</li></ul>

For boys 	
Fertility options	The options will depend on whether the boy has been through puberty. Most boys go through puberty by the age of 13–14. At this stage, mature sperm is present in the semen.
<b>Before puberty</b>	<ul style="list-style-type: none"> <li>• There are no proven fertility preservation methods for boys who have not gone through puberty.</li> <li>• Freezing testicular tissue (testicular tissue cryopreservation) is being tested on young boys at high risk of infertility. Tissue that contains cells that make sperm is removed from the testicles through a small cut. This technique is experimental and there are no successful pregnancies to date.</li> </ul>
<b>After puberty</b>	<ul style="list-style-type: none"> <li>• Sperm banking (cryopreservation) can be used to collect, freeze and store mature sperm for future use (see pages 44–45).</li> <li>• Testicular sperm extraction (see pages 44–45) can remove sperm cells, which are frozen and stored for later use with IVF. This technique is not widely available.</li> </ul>
<b>Before or after puberty</b>	<ul style="list-style-type: none"> <li>• The testicles can be shielded during radiation therapy to the pelvis. If this area is not protected, sperm production may be affected, which could make the boy infertile.</li> </ul>



## Key points about young people and fertility

### Fertility and cancer treatments

- While some cancer treatments do not affect a child's developing reproductive system, others can damage the ovaries of girls or the testicles of boys.
- This damage may be temporary or permanent.
- Parents or carers of children under 18 will usually need to consent to any fertility preservation procedures.
- Options will depend on whether the child has been through puberty. The decision will often be shared between the parent, young person and doctor.

### Fertility options before puberty

- For girls, ovarian tissue can be removed and frozen and then transplanted when needed (ovarian cryopreservation). This is an experimental procedure.
- For boys, the only available option is still experimental. Immature cells from the testicles are removed, frozen and stored for later use with IVF. This is called testicular tissue cryopreservation.

### Fertility options after puberty

- For girls, it may be possible to remove and freeze mature eggs. Some girls are able to take GnRH to reduce activity in the ovaries or ovarian tissue and protect eggs from damage.
- For boys, it may be possible to collect, freeze and store mature sperm cells for future use. This is known as sperm banking.



# Assessing fertility after treatment

After cancer treatment, you may want to do some tests to see how your fertility has been affected. The results will help the specialist recommend the best options for having a child after cancer treatment.

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 fertility specialist or reproductive endocrinologist can do a number of tests to assess your likely fertility status after treatment.

**Follicle-stimulating hormone (FSH)** – A blood test can measure the hormone FSH, which may indicate how close to menopause you are. This hormone is produced in the pituitary gland, and stimulates the follicles in the ovaries, which will in turn release eggs. 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 probe is inserted into the vagina to examine the structure of the reproductive organs, such as the cervix, uterus, fallopian tubes and ovaries.

**Antral follicle count (AFC)** – An ultrasound probe is inserted into the vagina to count the number of follicles in the ovaries. Each follicle contains a single immature egg.

**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** – An ultrasound probe is inserted into the vagina to show the volume of the ovaries. Usually the combined volume is about 10 mL. Women with an ovarian volume of less than 4 mL often find it challenging to become pregnant.

**Oestrogen (oestradiol)** – This is produced mainly in the ovary. The level of oestradiol in a woman is a sign of ovulation.

**Luteinising hormone (LH)** – A blood test can measure LH levels. This hormone helps a woman's ovaries release an egg. High levels of LH may be a sign of premature ovarian insufficiency (see page 25).

## 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.

**Follicle-stimulating hormone (FSH)** – A blood test can measure FSH. This hormone is produced in the pituitary gland. In males, FSH stimulates sperm production. The level of FSH goes up during puberty, and varies throughout the day.

If FSH levels are high, this is a sign that fewer sperm are being produced. If FSH levels are low, this indicates that the pituitary gland

is damaged. This will affect the number of sperm produced. This does not necessarily mean that sperm production is too low for a pregnancy but it is a sign of whether or not fertility has been affected.

**Luteinising hormone (LH) and testosterone** – A blood test can measure LH and testosterone levels. LH is important in fertility, because it maintains the amount of testosterone that is produced by the testicles. This also helps with sperm production, muscle strength, and general sexual health including sex drive (libido).

Like many hormones in the body, LH and testosterone levels are different at different times of the day. They are highest in the morning, so the test is done earlier in the day. It is important to tell your doctor whether or not you've been smoking marijuana, as this will lower LH and testosterone levels.

**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 compare this sample to your sperm sample after treatment.



## 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 any 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. During a 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. To find a familial cancer clinic, visit the Cancer Council Australia website at [cancer.org.au](https://www.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 64.

## 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 surrogate cannot use her own eggs. 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 pages 28–29).

Surrogacy is a complex process for everyone involved. The fertility clinic organising it ensures that both the donor and surrogate go through counselling and psychiatric testing before the process begins. 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 advertise for someone to act as a surrogate or 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 across 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.

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.

“ I was treated for cancer about 50 years ago when I was a toddler and the radiation therapy damaged my ovaries. After I married, I tried fertility drugs but didn’t have a viable pregnancy. We then 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*

**Fostering (foster care)** – This means taking responsibility for a child without having legal parental status. Types of foster care include emergency, respite, 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 rather than childless. Accepting that you won't have a child and learning to enjoy the benefits of being child-free – more time to follow other aspects of your life, focus on your relationship, advance your career or afford a different lifestyle – can take time. Many people have happy and fulfilling lives without children, or gain satisfaction from other types of nurturing.

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.

“ I learnt that you can live a fulfilled life without children. ” *Duncan*



## 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 at the diagnosis and impact on fertility, grief and loss of future plans, anger or depression from disruption of life plans, uncertainty about the future, loss of control over life direction, and worry about the potential effects of early menopause (such as reduced bone density).

These feelings may be intensified by the physical and emotional process of infertility treatment, and by not knowing if it will work. People who didn't get a chance to think about their fertility until treatment was over say the emotions can be especially strong.

“ 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*

While these feelings are a natural reaction to loss of fertility, see the next two pages for ways to manage these feelings before they overwhelm you. It may also help to consider other ways of becoming a parent (see pages 61–63), or you may decide to be child-free.

For information about the impact on your relationship with a partner and your sexuality, see pages 69–71.

## Coping strategies

Learning that cancer treatment has affected your ability to have children can be challenging. There is no right or wrong way of coping, but it's useful to consider different strategies to help you feel a greater sense of control and confidence. The strategies described here may help you cope.



### Find support from family and friends

Family and friends 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.

### Gather information

The impact of cancer on your fertility may change your future plans or make them unpredictable. Knowing your options for building a family may help you deal with feelings of uncertainty. Reading this booklet and talking to health professionals will help you learn more about your options.





### 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. Together you can discuss the impact of cancer and infertility on your relationships, moral or ethical concerns, coping with successful or unsuccessful fertility treatments, and your emotions about other people's pregnancies, births and babies. To find an infertility counsellor near you, visit Access Australia at [access.org.au](http://access.org.au).

### Try relaxation and meditation exercises

Both of these strategies can help reduce stress and anxiety.

- ▶ Contact Cancer Council **13 11 20** for free copies of our meditation and relaxation CDs.

### 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, or asking your health care team if you can be put in touch with a person who has been in a similar situation.



## 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 family members and friends 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 members 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 members 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 may affect your feelings towards 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 57–59). 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. Seeing a fertility counsellor can 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 sex or erectile dysfunction. 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, sensual massage, 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.

➤ See our *Sexuality, Intimacy and Cancer* booklet.

## Starting a new relationship

Many people deal with a cancer diagnosis without the support of a partner. If you wish to start a new relationship, you may find explaining fertility issues to a potential partner or new partner difficult. 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. Call 1800 835 932 or visit [canteen.org.au](http://canteen.org.au).



## 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

#### 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 Council Online Community	<a href="http://cancerCouncil.com.au/OC">cancerCouncil.com.au/OC</a>
CanTeen	<a href="http://canteen.org.au">canteen.org.au</a>
Carer Gateway	<a href="http://carergateway.gov.au">carergateway.gov.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	<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	<a href="http://wiki.cancer.org.au">wiki.cancer.org.au</a>
Australian Donor Conception Network	<a href="http://www.australiandonorconceptionnetwork.org">www.australiandonorconceptionnetwork.org</a>

## Fertility-related continued

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	<a href="http://intercountryadoption.gov.au">intercountryadoption.gov.au</a>
IVFAustralia	<a href="http://ivf.com.au">ivf.com.au</a>
The Royal Children's Hospital Melbourne	<a href="http://rch.org.au">rch.org.au</a>
Surrogacy Australia	<a href="http://www.surrogacyaustralia.org">www.surrogacyaustralia.org</a>

## International

### General

American Cancer Society	<a href="http://cancer.org">cancer.org</a>
Cancer.Net (US)	<a href="http://cancer.net">cancer.net</a>
Cancer Research UK	<a href="http://cancerresearchuk.org">cancerresearchuk.org</a>
Macmillan Cancer Support (UK)	<a href="http://macmillan.org.uk">macmillan.org.uk</a>
National Cancer Institute (US)	<a href="http://cancer.gov">cancer.gov</a>

### Fertility-related

Livestrong Fertility	<a href="http://livestrong.org/we-can-help/livestrong-fertility">livestrong.org/we-can-help/livestrong-fertility</a>
SaveMyFertility	<a href="http://savemyfertility.org">savemyfertility.org</a>
The Oncofertility Consortium	<a href="http://oncofertility.northwestern.edu">oncofertility.northwestern.edu</a>



# Question checklist

## Treatment and fertility

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?
- Can you refer me to a fertility specialist?
- 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.

## **acute ovarian failure**

Sudden loss of ovarian function.

## **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 diagnose disease.

## **bone marrow**

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

## **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 sexual intercourse resulting in pregnancy (e.g. condom use).

## **cryopreservation**

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

## **cystectomy**

Surgical removal of part or all of the bladder and surrounding lymph nodes.

## **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**

See ovum.

## **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).

**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**

An enlarged, rigid penis (sexual excitement).

**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 ovaries to the uterus.

**fertility**

The ability to conceive a child.

**fetus**

An unborn human more than eight weeks after conception.

**follicle**

A cavity in the ovary that contains a maturing egg.

**follicle-stimulating hormone (FSH)**

A hormone produced by the pituitary gland. It regulates the function of both the ovaries and testicles.

**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 hormone (GnRH)**

Long-acting hormone produced in the hypothalamus that stimulates the pituitary gland to release sex hormones, which in turn stimulate the ovaries and the testicles.

**gonadotropin-releasing hormone (GnRH) analogue**

Synthetically produced long-acting hormone that mimics the naturally produced GnRH, and which is used to slow or 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**

Treatment that stimulates the body's immune system to fight cancer.

**infertility**

Difficulty conceiving after trying to conceive for 12 months if the woman is 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.

### **luteinising hormone (LH)**

A hormone produced by the pituitary gland. It stimulates an ovary to release an egg and the testicles to make testosterone.

### **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, radiation therapy or hormone therapy; or after surgery to remove the ovaries.

### **menstruation**

A woman's monthly bleed from the vagina. Also called periods.

### **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**

Surgery to remove one or both testicles.

### **orgasm**

The peak of sexual response.

### **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 (ovum) during a woman's menstrual cycle.

**ovum (plural: ova)**

A female egg that is produced by the ovary and released during ovulation.

**pituitary gland**

A gland in the brain that produces hormones. These hormones 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 insufficiency (POI)**

The premature loss of ovarian function before the age of 40. 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 radiation therapy using a shield.

**radiation therapy**

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

**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 ejaculated from the penis during sexual climax. It contains sperm from the testicles and secretions from the prostate gland and seminal vesicles.

**seminal vesicles**

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

**sperm**

The male sex cell. Sperm is made in the testicles and is required for reproduction.

**sperm banking**

See cryopreservation.

**stem cell**

Unspecialised cells from which blood cells develop. Found in the bone marrow.

**stem cell transplant**

A treatment in which diseased blood cells are destroyed by high-dose chemotherapy or radiation therapy, 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 particles (molecules) within cells that allow cancer to grow and spread.

**testes**

See testicles.

**testicles**

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

**testicular sperm extraction (TESE)**

Surgically removing sperm from testicular tissue.

**testosterone**

The major male sex hormone produced by the testicles. A small amount is also made in the ovaries and helps increase sexual desire in women.

**trachelectomy**

The surgical removal of the cervix and some surrounding tissue.

**transvaginal ultrasound**

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

**ultrasound**

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

**uterus**

The hollow muscular organ in a woman's lower abdomen in which a fertilised egg (ovum) grows and a fetus is nourished until birth. Also called the womb.

**vagina**

The muscular canal about 7–10cm long that extends from the entrance of the uterus to the vulva in a woman.

**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)

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1. Clinical Oncology Society of Australia, AYA cancer fertility preservation guidance working group, *Fertility preservation for AYAs diagnosed with cancer: Guidance for health professionals*, Cancer Council Australia, Sydney. 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*. 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.

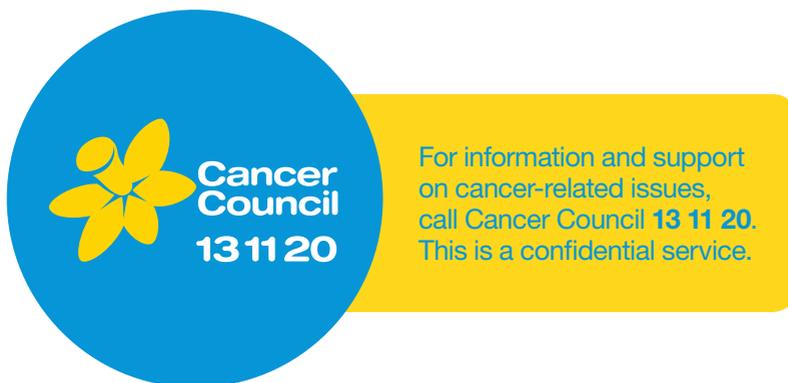
If you are finding it hard to navigate through the health care system, or just need someone to listen to your immediate concerns, call 13 11 20 and find out how we can support you, your family and friends.

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, you can 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

**Cancer Council WA**  
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.*