MACMILLAN CANCER SUPPORT

Cancer and fertility

About this booklet

This booklet is about how cancer and cancer treatments can affect fertility. Fertility means being able to start a pregnancy.

The booklet explains:

- how cancer treatments can affect fertility
- how fertility can be preserved before cancer treatment
- how fertility can be tested after cancer treatment
- options for fertility treatment to start a pregnancy
- other options for becoming a parent.

This booklet is for anyone who needs information about fertility before, during or after cancer treatment. This information is for you whether you are in a relationship or not and whatever your sexual orientation or gender.

We hope it helps you deal with some of the questions or feelings you may have. We cannot give advice about the best treatment for you. You should talk to your doctor, who knows your medical history. Your cancer doctor, nurse or fertility clinic can also help with any questions you have about fertility.

How to use this booklet

This booklet is split into sections to help you find what you need. You do not have to read it from start to finish. You can use the contents list on page 3 to help you.

It is fine to skip parts of the booklet. You can always come back to them when you feel ready.

On pages 96 to 103, there are details of other organisations that can help.

There is also space to write down questions and notes for your doctor or nurse (page 104).

Quotes

In this booklet, we have included quotes from people with cancer who have been affected by fertility issues, which you may find helpful. To share your experience, visit **macmillan.org.uk/shareyourstory**

For more information

If you have more questions or would like to talk to someone, call the Macmillan Support Line free on **0808 808 00 00**, 7 days a week, 8am to 8pm, or visit **macmillan.org.uk**

If you would prefer to speak to us in another language, interpreters are available. Please tell us, in English, the language you want to use.

If you are deaf or hard of hearing, call us using NGT (Text Relay) on **18001 0808 808 00 00**, or use the NGT Lite app.

We have some information in different languages and formats, including audio, eBooks, easy read, Braille, large print and translations. To order these, visit **macmillan.org.uk/otherformats** or call **0808 808 00 00**.

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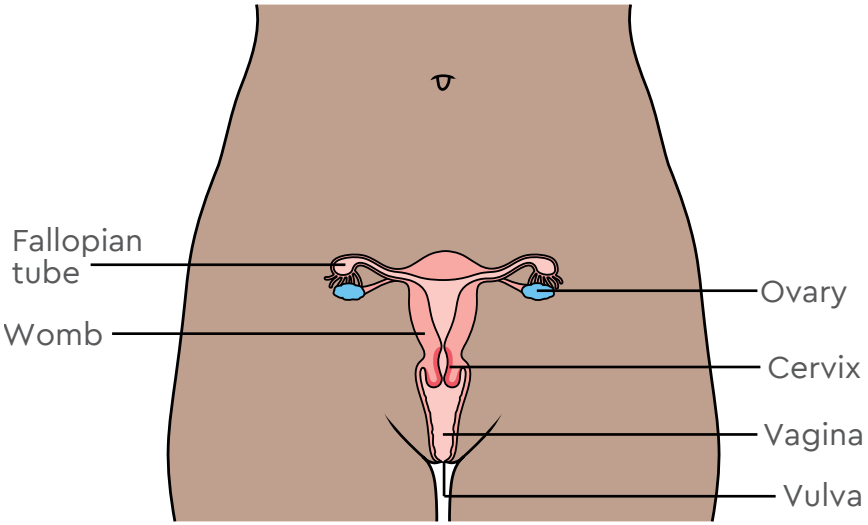
About cancer and fertility

What is fertility?

Your fertility means being able to get pregnant or make someone pregnant. The parts of your body that help you do this are called the reproductive system.

The female reproductive system



For women, trans men and other people assigned female at birth, the reproductive system you are born with includes:

- 2 ovaries
- 2 fallopian tubes
- the womb (uterus)
- the cervix
- the vagina.

To get pregnant and give birth to a baby, your body needs:

- to produce a supply of healthy eggs
- a healthy womb
- the right hormone levels.

Eggs develop in the ovaries, in small fluid-filled sacs called follicles. Once a month, 1 of the ovaries usually releases an egg. This is called ovulation.

Ovulation starts during puberty. It usually continues until the menopause (pages 12 to 13). Hormones help control this process. These are released by the pituitary gland (page 11) and the ovaries.

To start a pregnancy, the egg needs to be fertilised. This happens when it joins with a sperm. Sperm are made by the reproductive system of a man or person assigned male at birth.

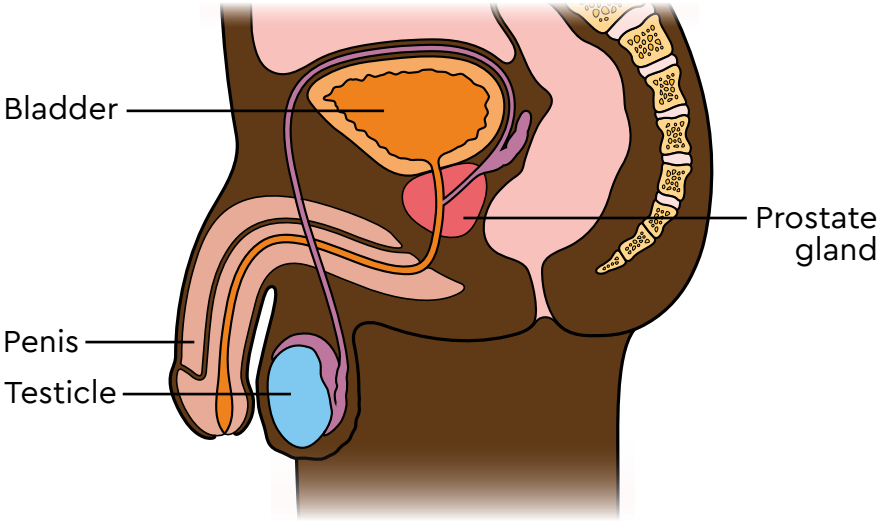
The egg leaves the ovary and travels along the fallopian tube. If it meets and joins with a sperm here, it may develop into an embryo. The embryo continues to travel to the womb, where it can settle itself into the womb lining. The embryo stays in the womb and grows into a baby.

Every month, hormones from the ovaries prepare the lining of the womb for an embryo. If the egg is not fertilised, the hormone levels drop. The womb lining then comes out through the vagina. This is called a monthly period.

You can start a pregnancy by:

- having vaginal sex
- using fertility treatments such as IUI or IVF (pages 77 to 82).

The male reproductive system



For men, trans women and other people assigned male at birth, the reproductive system you are born with includes the testicles, penis and prostate gland. To start a pregnancy, your body needs to produce healthy sperm.

The testicles start to make and store sperm during puberty. Chemical messengers called hormones help control this process.

Hormones are produced by:

- a small gland at the base of the brain called the pituitary gland
- the testicles.

The testicles produce the hormone testosterone. Testosterone controls sex drive and erections (the penis becoming hard).

To start a pregnancy, 1 sperm needs to reach and join with an egg. This is called fertilisation. Eggs are made by the reproductive system of a woman or person assigned female at birth.

You can start a pregnancy in the following ways:

- Ejaculating (coming) during vaginal sex – when you ejaculate, the fluid that comes out of the penis is called semen. Semen is made up of fluid from the prostate gland and sperm from the testicles.
- Using fertility treatments such as IUI or IVF – these treatments use samples of collected sperm (pages 77 to 82).

Menopause

Natural menopause

Women, trans men and other people assigned female at birth are born with lots of eggs stored in the ovaries. With age, the number of eggs decreases and hormone levels change. When very few eggs are left, the ovaries stop releasing an egg every month, and monthly periods stop. When periods have stopped for more than 1 year, this is called the menopause.

Symptoms of the menopause include:

- hot flushes and sweats
- vaginal dryness
- mood swings
- feeling emotional or anxious
- difficulty sleeping
- a low sex drive.

The menopause happens naturally because of age. Usually, this is between the ages of 45 and 55. Natural menopause is permanent.

Other causes of menopause

The menopause and menopausal symptoms can happen for reasons other than age.

Sometimes they are a side effect of cancer treatment. Depending on the type of cancer treatment, you may have either of the following:

- Temporary menopause – periods may stop during treatment and start again after. You may also have some menopausal symptoms for a time. These may get better gradually after treatment ends.
- Permanent menopause – some cancer treatments cause permanent damage to the ovaries. You may have no more periods and continue to have menopausal symptoms after treatment ends. This is called early menopause or premature ovarian insufficiency (POI).

Some other medications and health conditions can affect your hormone levels and cause menopausal symptoms. Always talk to your doctor if you have symptoms that are ongoing, unexplained or unusual for you. They can check your hormone levels and give you advice.

Coping with menopausal symptoms can be hard. Ask your cancer doctor or specialist nurse for advice about treatments that can help.

We have more information about coping with menopausal symptoms on our website. Visit **macmillan.org.uk/menopausal-symptoms**

Before cancer treatment

Talking to your healthcare team

It can be hard to think about fertility and the future when you are coping with cancer. Having children might be something you have never thought about.

But some decisions about fertility have to be made before cancer treatment starts. If being able to start a pregnancy is important to you or might be in the future, talk to your cancer doctor or specialist nurse early on. You do not need to be in a relationship, or a certain age, gender or sexual orientation.

If your doctor or nurse has not talked to you about fertility and you want information, it is important to ask them.

Your doctor or nurse can explain any risks to your fertility (pages 22 to 46). Some cancer treatments are unlikely to cause fertility problems. Others might cause fertility problems during treatment or for a short time after. Some treatments cause long-term or permanent damage to fertility.

Your doctor or nurse can explain if there are ways you might be able to protect your fertility during cancer treatment. For example, taking certain drugs during chemotherapy may help protect the ovaries from some damage.

Some types of cancer treatment might make you infertile (unable to start a pregnancy). Your doctor or nurse should talk to you about fertility preservation (pages 50 to 65).

This means storing your:

- sperm – pages 52 to 55
- eggs – pages 56 to 59
- embryos (eggs fertilised with sperm) – page 61
- ovarian tissue – page 62
- testicular tissue – page 55.

Not everyone can have fertility preservation before cancer treatment. And not everyone wants to have it. Sometimes people are too unwell. Or if cancer treatment has to start quickly, there may not be time.

If you are taking gender-affirming hormones, this may affect your fertility preservation options too. If you are taking masculinising hormones, these may protect the ovaries during chemotherapy (pages 25 to 27).

If you are thinking about fertility preservation, your cancer doctor can refer you to a fertility clinic straight away. At the fertility clinic, a specialist can explain:

- your options for fertility preservation
- what each option involves
- the possible risks or side effects
- how likely each option is to start a pregnancy in the future.

This can be a lot of information to understand. You may want to take notes or have someone with you for support. You will also be offered an appointment with a specialist fertility counsellor, who can support you and your partner if you have one.

Try to think about the questions you want to ask. This is so you can get all the information you need to make a decision that is right for you.

Contraception during cancer treatment

Even if your cancer treatment could damage fertility, your cancer doctor may talk to you about contraception to prevent a pregnancy.

This is because some treatments:

- can damage sperm or eggs – this may affect a baby and cause abnormalities if a pregnancy starts during treatment
- are harmful to a baby developing in the womb.

Your doctor may advise you not to get pregnant or make someone pregnant during treatment and for a time after. They can tell you how long you need to use contraception for to prevent a pregnancy. They can also help you choose which type of contraception is right for you. If you have questions about contraception, talk to your doctor or nurse.

If your fertility recovers after treatment, it is difficult to predict when this will be. It could happen without you being aware of it. If you do not want to start a pregnancy, you should keep using contraception, unless doctors tell you the infertility is permanent.

It is important to remember that these things are not signs of being fertile:

- **Being able to get erections or orgasm** – this does not tell you whether your body is producing sperm.
- **Being able to ejaculate** – this means your body is producing fluid called semen. It does not always mean you are producing sperm.
- **Having or not having monthly periods** – this does not tell you whether your body is producing eggs. You might still be able to get pregnant even if your periods stop during cancer treatment. Or you might not be able to get pregnant if they start again after treatment.

After cancer treatment, you can have tests to check your fertility. We have more information about fertility testing after cancer treatment on pages 72 to 73.

Questions to ask about fertility

Before cancer treatment

- How will cancer treatment affect my fertility?
- Are there ways to protect my fertility during cancer treatment?
- Can I store sperm, eggs or embryos?
- Can I store testicular or ovarian tissue?
- What type of contraception should I use during cancer treatment?
- What support can I get to help with concerns or feelings about my fertility?

After cancer treatment

- What type of contraception should I use after cancer treatment and for how long?
- When can I have tests to check my fertility?
- What are my options for starting a pregnancy?
- When can I try to start a pregnancy?
- Which fertility treatments might help me?

Your data and the cancer registry

When you are diagnosed with cancer in the UK, some information about you, your cancer diagnosis and your treatment is collected in a cancer registry. This is used to plan and improve health and care services. Your hospital will usually give this information to the registry automatically.

There are strict rules to make sure the information is kept safely and securely. It will only be used for your direct care or for health and social care planning and research.

Talk to your doctor or nurse if you have any questions. If you do not want your information included in the registry, you can contact the cancer registry in your country to opt out (page 103).

Cancer treatments

Cancer treatments and fertility

The main treatments for cancer are:

- chemotherapy
- radiotherapy
- surgery
- hormonal therapy
- targeted therapy
- immunotherapy.

Your doctors may not be able to predict how cancer treatment will affect your fertility. But planning your treatment can help give them an idea of your risk. Sometimes they may be able to reduce the effects of a treatment on your fertility.

Each cancer treatment can affect fertility in different ways. For example, treatment may damage or affect:

- the pituitary gland and hormone levels (page 11)
- sperm production and quality
- the ability to have an erection or ejaculate
- the eggs in the ovaries
- the womb or cervix.

Cancer and cancer treatment can also change how you feel about sex. It is common to have problems with sexual well-being during cancer treatment and after.

Talking about this can be difficult and sometimes embarrassing, but your healthcare team is there to support you. We have more information about who can help and how to talk to your healthcare team about sex in our booklet **Cancer and your sex life** (page 90).

The effect of cancer treatment on your fertility can be difficult to deal with, and you may have lots of different emotions. Making decisions about what to do next will be very personal to you. Your healthcare team can help, and there is support available as you think about this information (pages 96 to 103).

We have more information about sexual well-being and cancer on our website. Visit **macmillan.org.uk/sex-and-cancer**

Chemotherapy

Chemotherapy uses anti-cancer (cytotoxic) drugs to destroy cancer cells.

Does chemotherapy affect sperm?

Chemotherapy can reduce or stop sperm production. This is usually temporary. But sometimes it can be permanent.

It may depend on:

- **the drugs you have** – some chemotherapy drugs affect sperm production more than others
- **the combination of drugs** – having different drugs together may be more likely to reduce sperm production than having a single drug
- **the dose of the drug** – higher doses of chemotherapy are more likely to affect sperm production, especially if you have it before a stem cell transplant.

Sometimes it is possible to choose a chemotherapy treatment that is less likely to affect your fertility. Your cancer doctor can tell you whether this is an option for you.

Sperm and fertility after chemotherapy

After chemotherapy, you can have tests to check whether you are producing healthy sperm (page 72).

If you are producing sperm, you may be able to try to start a pregnancy by having vaginal sex or using fertility treatments such as IUI or IVF (pages 74 to 79).

If you stored sperm before cancer treatment (pages 52 to 55), you may decide to use it with fertility treatments such as IUI or IVF. Or you may decide to find out about using a sperm donor (pages 80 to 81).

Does chemotherapy affect the ovaries?

Chemotherapy can reduce the number of eggs stored in the ovaries. It can also make the ovaries release fewer or no eggs. You may have a temporary or permanent early menopause (pages 12 to 13). Unfortunately, if the menopause is permanent you will be infertile.

Your risk of infertility may depend on:

- **your age when you have chemotherapy** – the closer you are to a natural menopause, the higher the risk of infertility
- **the drugs you have** – some chemotherapy drugs affect the ovaries more than others
- **the combination of drugs** – having different drugs together may be more likely to affect the ovaries than having a single drug
- **the dose of the drug** – higher doses of chemotherapy are more likely to affect the ovaries, especially if you have it before a stem cell transplant.

"My consultant advised me to go ahead with egg preservation for my own peace of mind. I do not want to be at a stage when I am older and trying to conceive but I cannot."

Mariam, diagnosed with Hodgkin lymphoma

Chemotherapy can reduce the number of eggs you have. This may cause the menopause to start 5 to 10 years earlier than it would naturally. This means you have a shorter time to try to get pregnant.

Sometimes it is possible to choose a chemotherapy treatment that is less likely to affect your fertility. Or your cancer doctor may give you another drug during chemotherapy to try to protect the ovaries. They will tell you whether these are options for you.

Tell your cancer doctor if you are taking masculinising hormones as a gender-affirming treatment. Some masculinising hormones work by 'switching off' or suppressing the ovaries. This may help protect the ovaries from some damage during chemotherapy.

You may still have the option to start a pregnancy or have fertility preservation after chemotherapy. Your doctor or nurse can explain more about this.

Ovaries and fertility after chemotherapy

After chemotherapy, you can have tests to help find out how your fertility has been affected (pages 72 to 73).

If your fertility recovers, you may be able to try to start a pregnancy by having vaginal sex or using fertility treatments such as IUI or IVF (pages 74 to 79).

If you stored eggs, embryos or ovarian tissue before cancer treatment (pages 56 to 62), you may decide to use these with fertility treatments. Or you may decide to find out about using an egg donor (pages 80 to 81).

Radiotherapy

Radiotherapy uses high-energy rays to destroy cancer cells. It is given to an area of the body as precisely and carefully as possible. This means it usually only affects fertility if the treatment area includes part of the female reproductive system (page 6), the male reproductive system (page 10) or the pituitary gland (page 11).

For example, your fertility may be affected if you have the following treatment:

- **Pelvic radiotherapy** – this is radiotherapy to the area between your hips and below your belly button. It might affect parts of the reproductive system, depending on the exact treatment area.
- **Radiotherapy to the brain** – if the pituitary gland is in the treatment area, this can affect the hormones your body uses to control the reproductive system.
- **Total body irradiation (TBI)** – this is radiotherapy to the whole body before a donor stem cell or bone marrow transplant. It usually causes permanent infertility.

It is sometimes possible to protect the testicles or ovaries during pelvic radiotherapy. Your cancer doctor can explain whether the following are suitable for you:

- **To protect the testicles** – the radiographer may use shielding cups to cover and protect the testicles during treatment. Or they may use intensity-modulated radiotherapy (IMRT). This shapes the radiotherapy beams to fit the outline of tumours more precisely. It causes less damage to areas near the tumour.
- **To protect the ovaries** – the radiographer may use a lead shield to protect the ovaries during treatment. Or you may have keyhole surgery before radiotherapy starts, to move the ovaries away from the area being treated. This is called ovarian transposition.

Does radiotherapy affect sperm?

Radiotherapy to the pelvis can reduce the amount and quality of sperm you produce. This may be temporary or permanent. It may depend on the type and amount of radiotherapy you have.

Radiotherapy to the pelvis may also affect how much semen your body makes. When you ejaculate, you may notice that only a small amount of fluid comes out. Or you may notice that no fluid comes out. This means you have stopped producing semen. It is called dry ejaculation.

If you have radiotherapy directly to the testicles or total body irradiation (TBI), it will cause permanent infertility. You may still produce semen when you ejaculate, but it will not contain sperm.

Radiotherapy to the brain can affect how the pituitary gland releases hormones called gonadotrophins. These hormones stimulate the testicles to produce testosterone and sperm. The pituitary gland may stop producing gonadotrophins months or years after this type of radiotherapy treatment.

Sperm and fertility after radiotherapy

After pelvic radiotherapy, you can have tests to check whether you are producing healthy sperm (page 72). After pituitary radiotherapy, you can also have tests to check your hormone levels.

If you are producing sperm, you may be able to try to start a pregnancy by having vaginal sex or using fertility treatments such as IUI or IVF (pages 74 to 79).

If you stored sperm before cancer treatment (pages 52 to 55), you may decide to use it with fertility treatments.

If you have dry ejaculation, you may be able to have sperm collected by sperm extraction (page 54). The sperm can then be used with ICSI treatment (page 79).

After pituitary gland radiotherapy, you may have gonadotrophin-replacement injections. These may help you produce sperm to start a pregnancy – by having vaginal sex or with fertility treatments such as IUI or IVF.

Or you may decide to find out about using a sperm donor (pages 80 to 81).

Does radiotherapy affect erections?

Radiotherapy to the pelvis or pituitary gland may reduce how much testosterone you produce. This can affect your sex drive and ability to get an erection. You can have testosterone replacement therapy (TRT) to help with erections and sex drive. But TRT does not make the testicles produce sperm.

Radiotherapy to the pelvis can also damage nerves or blood vessels to the penis. Your body may still produce sperm and semen. But you may have problems getting erections or ejaculating.

It can be difficult to talk about problems like this. Try not to let embarrassment stop you from asking for help. If you are worried, your healthcare team is always a good place to start. There may be advice, support or treatments that can help improve some problems. This can depend on the underlying cause, so it is important to get the right advice for your situation.

Erections and fertility after radiotherapy

If you stored sperm before cancer treatment (pages 52 to 55), you may decide to use it with fertility treatments such as IUI or IVF (pages 74 to 79). Or you may decide to find out about using a sperm donor (pages 80 to 81).

If you have erection or ejaculation problems, you may be able to have sperm collected by sperm extraction (page 54) and use it with ICSI (page 79).

Does radiotherapy affect the ovaries and womb?

Radiotherapy to the pelvic area can affect how the ovaries and womb work. Sometimes this improves after treatment, and it does not always affect fertility. But unfortunately, for some people, it may mean they cannot get pregnant in the future.

Radiotherapy directly to the ovaries and womb causes an early menopause (pages 12 to 13) and permanent infertility. Radiotherapy to other areas of the pelvis may affect the ovaries or womb indirectly. The ovaries may stop working for a short time or permanently.

If they recover after treatment, you may be able to get pregnant. If radiotherapy affects the womb, you may be able to get pregnant. But there will be a higher risk of miscarriage or premature birth.

Your risk of infertility after pelvic radiotherapy depends on:

- the dose of radiotherapy you have
- your age – the risk increases as you get older
- whether you also have chemotherapy – there is a higher risk of infertility when you have chemotherapy with radiotherapy (chemoradiation).

Radiotherapy to the brain can affect how the pituitary gland releases hormones called gonadotrophins. These hormones stimulate the ovaries.

The pituitary gland may stop producing gonadotrophins months or years after this type of radiotherapy. If this happens, the ovaries still contain eggs. But they may stop releasing them.

The ovaries, womb and fertility after radiotherapy

After pelvic radiotherapy, you can have tests to help find out if and how your fertility has been affected (pages 72 to 73). After pituitary gland radiotherapy, you can have tests to check your hormone levels.

If your fertility recovers, you may be able to try to start a pregnancy by having vaginal sex or using fertility treatments (pages 74 to 79).

If you stored eggs, embryos or ovarian tissue (pages 56 to 62) before cancer treatment, you may decide to use these with fertility treatments. Or you may decide to find out about using an egg donor (pages 80 to 81).

If radiotherapy has affected the womb, or there is another reason you cannot get pregnant or give birth, you may decide to find out about using a surrogate (page 82).

After pituitary gland radiotherapy, you may have gonadotrophin-replacement injections. These can stimulate the ovaries to release an egg. You may then be able to get pregnant by having vaginal sex or using fertility treatments.

Does radiotherapy affect the vagina?

Radiotherapy to the pelvis sometimes makes the vagina narrower, drier or less stretchy. This may make vaginal sex difficult or painful.

It can be difficult to talk about problems like this. Try not to let embarrassment stop you from asking for help. If you are worried, your healthcare team is always a good place to start. There may be advice, support or treatments that can help.

Vaginal changes and fertility after radiotherapy

If vaginal sex is not possible, you may be able to start a pregnancy using IUI or IVF (pages 74 to 79). Or you may decide to find out about using an egg donor (pages 80 to 81).

Your healthcare team can support you and tell you more about your options.

Surgery

Surgery is a common treatment for cancer. It only usually affects fertility if the operation involves part of the female reproductive system (page 6), the male reproductive system (page 10) or the pituitary gland (page 11).

Surgery to the testicles

Testicular cancer is usually diagnosed and treated with surgery.

After testicular surgery

Removing 1 testicle should not affect your fertility, as long as the other testicle is healthy. After surgery, you can have tests to check whether you are producing healthy sperm (page 72). Rarely, both testicles have to be removed. This will cause permanent infertility.

If you are producing sperm, you may be able to try to start a pregnancy by having vaginal sex or using fertility treatments such as IUI or IVF (pages 74 to 79).

If you stored sperm before cancer treatment (pages 52 to 55), you may decide to use it with fertility treatments such as IUI or IVF. Or you may decide to find out about using a sperm donor (pages 80 to 81).

Surgery to the prostate gland

You may have surgery to treat prostate cancer. If the prostate gland (page 10) is removed, you will still make sperm, but not semen. This means that nothing will come out during ejaculation. It is called dry ejaculation.

Prostate surgery and other prostate cancer treatments usually affect erections or sex drive. It can be difficult to talk about problems like this. Try not to let embarrassment stop you from asking for help. If you are worried, your healthcare team is always a good place to start.

There may be advice, support or treatments that can help improve some problems. This can depend on what is causing the problem, so it is important to get the right advice for your situation.

After prostate surgery

After prostate surgery, you can have tests to check whether you are producing healthy sperm (page 72). If you are producing sperm, you may be able to start a pregnancy by having vaginal sex or with fertility treatments such as IUI or IVF (pages 74 to 79). If you have erection or ejaculation problems, you may be able to have ICSI treatment (page 79).

If you stored sperm before cancer treatment (pages 52 to 55), you may decide to use it with fertility treatments such as IUI or IVF. Or you may decide to find out about using a sperm donor (pages 80 to 81).

Other surgery and erection or ejaculation problems

If you have testicular cancer, you may need an operation to remove lymph nodes in the tummy area (abdomen). This is called a retroperitoneal lymph node dissection. It is sometimes used for other types of cancer.

This operation can cause nerve damage, which may cause retrograde ejaculation. This is when semen goes into the bladder instead of coming out through the penis when you ejaculate. The semen then leaves your body harmlessly in your urine (pee).

Other operations can damage nerves and blood vessels to the penis. This may affect erections and ejaculation. These operations include surgery to the:

- prostate
- bladder
- bowel
- penis
- spine.

Changes to erections or ejaculation after surgery

There are drugs that may help push semen out of the body when you ejaculate. Or it might be possible to collect sperm from your urine (pee) – page 55. Then it can be used with ICSI (page 79).

If you have erection problems, you may be able to have sperm collected by sperm extraction (page 54). Then it can be used with ICSI (page 79).

If you stored sperm before cancer treatment (pages 52 to 55), you may decide to use it with fertility treatments such as IUI or IVF (pages 74 to 79). Or you may decide to find out about using a sperm donor (pages 80 to 81).

Surgery to the pituitary gland

When surgeons remove a pituitary gland tumour, they try to leave some of the gland. This means it can continue releasing hormones. But this is not always possible.

After pituitary gland surgery

After surgery, you can have tests to check how your fertility and hormone levels have been affected (pages 72 to 73).

If your fertility is not affected, you may be able to try to start a pregnancy by having vaginal sex or using fertility treatments (pages 74 to 79).

If your hormone levels are low, you may be able to have injections to stimulate the testicles to produce sperm, or the ovaries to release an egg. These are called gonadotrophin-replacement injections. You may be able to start a pregnancy by having vaginal sex or using fertility treatments (pages 74 to 79).

If you stored sperm, eggs, embryos or ovarian tissue before cancer treatment (pages 52 to 62), you may decide to use these with fertility treatments. Or you may decide to find out about using a sperm or egg donor (pages 80 to 81).

Surgery to the womb or ovaries

For some cancers, surgery involves removing the womb (hysterectomy), the ovaries or both. Your healthcare team can explain the impacts of this operation, and give you support.

After a hysterectomy

If the womb is removed, you will not be able to get pregnant and give birth. But if the ovaries have not been removed, you may still produce eggs. You may be able to start a pregnancy with a surrogate using your own eggs or donor eggs (pages 80 to 82).

After surgery to remove the ovaries

Having 1 ovary removed is sometimes called fertility-sparing surgery. The remaining ovary continues to release eggs and hormones. Because you still have a womb, you may be able to get pregnant and give birth yourself.

If both ovaries are removed, you will have an early menopause and will not produce any more eggs. If you stored eggs, embryos or ovarian tissue before surgery (pages 56 to 62), you may be able to use these with fertility treatments. Or you may decide to find out about using an egg donor (pages 80 to 81).

Surgery to the cervix

Surgery may be used to remove small cancers from the cervix (page 6). This may affect fertility or increase the risk of complications during pregnancy. But it depends on the type of operation you have.

Surgery to the cervix may include the following operations:

- **Large loop excision of the transformation zone (LLETZ)** – a small area of cervix is removed using a thin, loop-shaped tool. LLETZ surgery can cause scarring. It may also narrow the cervix.
- **Cone biopsy** – a cone-shaped section of cervix is removed. The area removed is larger than with LLETZ surgery.
- **Trachelectomy** – the whole cervix is removed. Nearby areas may also be removed, such as the upper part of the vagina.

It is important to get information and support from your cancer doctor and specialist nurse about how surgery may affect your fertility. They can explain whether you are likely to need fertility treatments such as IUI or IVF (pages 74 to 79).

Some people will need a caesarean section to deliver their baby. Others may have a higher risk of miscarriage or early labour.

The Royal College of Obstetricians & Gynaecologists has more information about some operations and about pregnancy and birth (page 97).

Hormonal therapy

For some types of cancer, hormones encourage the cancer cells to grow. Your cancer doctor may treat you with a hormonal therapy drug. These reduce the levels of hormones in the body or block their effect on cancer cells.

This type of treatment is often used to treat prostate cancer or breast cancer.

Hormonal therapy for prostate cancer

Hormonal therapy drugs for prostate cancer reduce testosterone levels. This affects how your body produces sperm.

Low testosterone also causes:

- loss of sex drive
- problems getting or keeping an erection.

After treatment ends, these changes may gradually improve. But this can depend on whether you have had other treatments, such as pelvic radiotherapy (pages 28 to 35) or surgery (pages 36 to 41). You may need to continue taking hormonal therapy drugs to control cancer. Your cancer doctor can give you more information about this.

We have more information about hormonal therapy for prostate cancer on our website. Visit **macmillan.org.uk/hormonal-therapy-prostate-cancer**

Hormonal therapy for breast cancer

Hormonal therapy drugs for breast cancer reduce oestrogen levels.

For women, trans men and other people assigned female at birth, these drugs can affect fertility. The effects are usually temporary, but you may need to take hormonal therapy drugs for a number of years. This means you may have less time to start a pregnancy after treatment. Or you may have a natural menopause before you finish treatment.

During treatment, monthly periods may change or stop. They usually start again after you have finished taking hormonal therapy drugs, but this can take a few months.

It is still important to use contraception to prevent a pregnancy during hormonal therapy. This is because the drugs may harm a baby developing in the womb. Your cancer doctor or nurse can explain more about this.

If you have a natural menopause while having treatment, you may not be aware of it. This is because the side effects of hormonal therapy drugs are similar to the symptoms of the menopause (page 12).

If you are taking hormonal therapy drugs to reduce your risk of breast cancer coming back, you may be able to stop treatment for a time to start a pregnancy. It is important to talk to your cancer doctor if you are thinking about stopping treatment. They can give you information and help you understand all the possible risks before you make a decision.

For men, trans women and other people assigned male at birth, there is not much information about how these drugs affect your fertility. Your cancer doctor can explain more about this and give you advice.

After hormonal therapy for breast cancer

After hormonal therapy treatment, you can have tests to help check how your fertility has been affected (pages 72 to 73).

If your fertility recovers, you may be able to try to start a pregnancy by having vaginal sex or using fertility treatments (pages 74 to 79).

If you stored sperm, eggs, embryos or ovarian tissue before cancer treatment (pages 52 to 62), you may decide to use these with fertility treatments. Or you may decide to find out about using a sperm or egg donor (pages 80 to 81).

Your healthcare team can support you and tell you more about your options.

We have more information about hormonal therapy for breast cancer on our website. Visit **macmillan.org.uk/hormonal-therapy-breast-cancer**

Targeted therapy and immunotherapy

Targeted therapy drugs find and attack cancer cells. Immunotherapy drugs use the immune system to recognise and kill cancer cells.

These treatments are used to treat many different cancers. Because they are newer types of treatment, doctors do not yet know exactly what effect they may have on fertility.

If you are treated with a targeted therapy or immunotherapy drug, your cancer doctor can talk to you about possible risks to your fertility and the options you may have.

After targeted therapy or immunotherapy

After treatment, you can have tests to help to check how your fertility has been affected (pages 72 to 73). You may be able to try to start a pregnancy by having vaginal sex or using fertility treatments (pages 74 to 79).

If you stored sperm, eggs, embryos or ovarian tissue before cancer treatment (pages 52 to 62), you may decide to use these with fertility treatments. Or you may decide to find out about using a sperm or egg donor (pages 80 to 81).

Fertility preservation

Ways of preserving fertility

Preserving fertility means collecting and storing sperm, eggs, embryos or tissue from the testicle or ovary. Your right to fertility preservation is the same:

- whether or not you are in a relationship
- whatever your sexual orientation
- whatever your gender identity.

If you think you may want to preserve your fertility, you will be referred to a fertility clinic. The doctor or nurse at the fertility clinic will explain what fertility preservation involves and the possible risks and benefits. They will also explain your options for starting a pregnancy in the future.

If you decide to preserve your fertility, you will have a blood test to check for infections such as HIV and hepatitis B and C. The results will not affect whether you can have fertility preservation. But it helps the clinic store your cells or tissue safely.

You will be asked to sign consent forms that explain how your sperm, eggs, embryos or tissue can be used in the future. Staff at the fertility clinic will talk to you about this and explain your options.

In some situations and some areas of the UK, the NHS may provide fertility preservation and storage for free. But this can vary and you may have to pay for it yourself. Staff at the fertility clinic will tell you what is available for you.

Even if the NHS pays for storage, you may have to pay for any fertility treatment you need in the future. Your doctor or nurse will give you information about costs in your area. You can also get information about costs from the fertility clinic or on their website.

Storage is usually for at least 10 years. This can be extended every 10 years up to 55 years in total.

You can find information about NHS and private fertility clinics on the Human Fertilisation & Embryology Authority (HFEA) website. HFEA also has information about access to treatment for same-sex couples and for trans and non-binary people (page 97).

If you are taking gender-affirming hormones

Gender-affirming hormones are also called:

- cross-sex hormones
- feminising hormones
- masculinising hormones.

These treatments affect your body's ability to produce sperm or eggs.

You usually need to stop taking gender-affirming hormones for at least 3 months before fertility preservation. This gives you the best chance of being able to produce sperm or eggs that can be collected.

Unfortunately, there is not usually time to do this before cancer treatment. But if you have not already stored sperm or eggs, you may be able to after cancer treatment.

Storing sperm

Collecting and storing sperm is sometimes called sperm banking. It is a safe and simple process that has been used for many years.

You can store sperm if you have reached puberty and your body is producing sperm. Your sperm will be frozen and stored in liquid nitrogen. This is called cryopreservation.

If you decide to store your sperm, your doctor will likely advise you to do it before cancer treatment starts. Treatment can affect the quality and number of sperm your body produces. Your cancer doctor or specialist nurse can talk to you about this.

"The oncologist advised me to store the sperm. He advised me that the chemotherapy I was on would not have an effect, but to do it just in case. Better safe than sorry. It is still being stored now but hopefully I will never need it."

Luke, diagnosed with bowel cancer

Collecting sperm

Sperm is usually collected from samples that you give by masturbating. There will be a private room in the fertility clinic where you can give a sample.

People often feel embarrassed or worried about giving sperm samples. Having to produce a sample in this situation can be stressful. If you are worried or have questions, talk to the staff at the clinic. They may be able to give you advice or information that helps you prepare for giving samples.

It may be possible to masturbate at home and then take your sample to the clinic. You need to keep the sample warm and take it to the clinic within 45 minutes of producing it. The clinic can give you more information about this.

If you can only give 1 sample before cancer treatment starts, it may be enough. But you may be asked to provide 2 or 3 samples over a week to get good-quality samples.

Your fertility doctor or nurse will tell you how many samples you need to give. They usually advise you:

- to stop having sex or masturbating for 1 to 2 days before giving each sample – this allows more sperm to be collected
- not to stop having sex or masturbating for more than 7 days before each sample – this helps you produce better-quality sperm.

Surgical sperm extraction

If you cannot produce a sample by masturbation, a specialist doctor may be able to collect sperm from the testicle. This is called surgical sperm extraction or retrieval. It can be done before or sometimes after cancer treatment.

For some types of cancer, you may be able to have sperm extraction during surgery to treat the cancer. Your doctor will tell you if this is an option for you.

Sperm extraction is done in 1 of the following ways:

- **Testicular sperm aspiration (TESA) or percutaneous epididymal sperm aspiration (PESA)** – the doctor passes a fine needle into the testicle or the epididymis to collect sperm. The epididymis is a tube on the side of each testicle. It stores and carries sperm.
- **Testicular sperm extraction (TESE)** – the doctor takes tiny bits of tissue from the testicle.
- **Microscope-assisted testicular sperm extraction (MicroTESE) or microsurgical epididymal sperm aspiration (MESA)** – the doctor uses a microscope during the extraction. This helps them select fluid and tissue from the testicle or the epididymis that is most likely to contain sperm.

Before the extraction, you usually have a local anaesthetic and sedation. Sometimes you have a general anaesthetic.

The collected fluid or tissue is looked at under a microscope in a laboratory. Any sperm are removed, frozen and stored for future use with fertility treatments such as ICSI (page 79).

Urinary sperm retrieval

If you have retrograde ejaculation (page 38), sperm and semen go into the bladder when you orgasm.

It may be possible to collect sperm from your urine (pee). You will be given a drink that makes your urine less harmful to your sperm. You pass urine and then masturbate. After you orgasm (come), you pass urine again. The sperm are quickly collected from your urine. They are then stored.

Storing testicular tissue

Your body starts making sperm during puberty. If you need cancer treatment before puberty, you cannot store sperm. But it may be possible to collect and store small samples of tissue from the testicles. To collect the tissue, you have keyhole surgery before cancer treatment starts.

This is called testicular tissue cryopreservation. It is not a standard treatment and is only available at a few clinics in the UK. In the future, there may be ways to use the stored tissue to produce sperm. But research into this is still at an early stage. Testicular tissue has not yet been used to start any pregnancies. Doctors do not fully know the risks involved.

Storing eggs

You can store eggs if you have reached puberty and your body is producing eggs. This is a common and effective way of preserving fertility.

You usually have hormone injections to help you release more eggs. This is called ovarian stimulation. The eggs are collected and then frozen and stored in liquid nitrogen. This is called cryopreservation.

Ovarian stimulation

For 8 to 14 days before the eggs are collected, you have injections of hormones called gonadotrophins. These are daily injections you have into the skin. The hormones make the ovaries produce more mature eggs than usual. Collecting as many eggs as possible increases your chance of starting a pregnancy in the future.

Ovarian stimulation is not suitable for everyone. For example, there may not be time if you need to start cancer treatment straight away.

Full ovarian stimulation may not be an option if you have an oestrogen-sensitive cancer. This means a cancer that is encouraged to grow by the hormone oestrogen. This includes some types of breast cancer, ovarian cancer and womb (endometrial) cancer. The gonadotrophin injections increase your level of oestrogen and may be harmful.

If you have any of these cancers, your cancer doctor and fertility specialist can give you advice. It may be possible to collect eggs in 1 of the following ways:

- Without ovarian stimulation – your doctor may be able to collect 1 or 2 eggs in this way. But collecting fewer eggs reduces your chance of starting a pregnancy in the future.
- With 1 injection of ovarian stimulation.
- With a hormonal therapy tablet called letrozole during ovarian stimulation – letrozole helps protect you from the effects of oestrogen on cancer cells.

Your doctor will explain any risks of ovarian stimulation and give you information about your options.

"I talked it through with my mum and she said that if I want kids, I should definitely freeze my eggs. I feel I was lucky that I had the right advice and a really good specialist. There was so much I did not know and so much to go through."

Anglee, diagnosed with non-Hodgkin lymphoma

Monitoring ovarian stimulation

During ovarian stimulation, you will have tests at the fertility clinic. These can show when the eggs might be ready to collect.

You will have:

- blood tests to check hormone levels
- ultrasound scans.

Ultrasound uses sound waves to check how the follicles containing the eggs are developing in the ovaries. The ultrasound probe goes inside the vagina. This is not usually painful. The probe is about as wide as a large tampon.

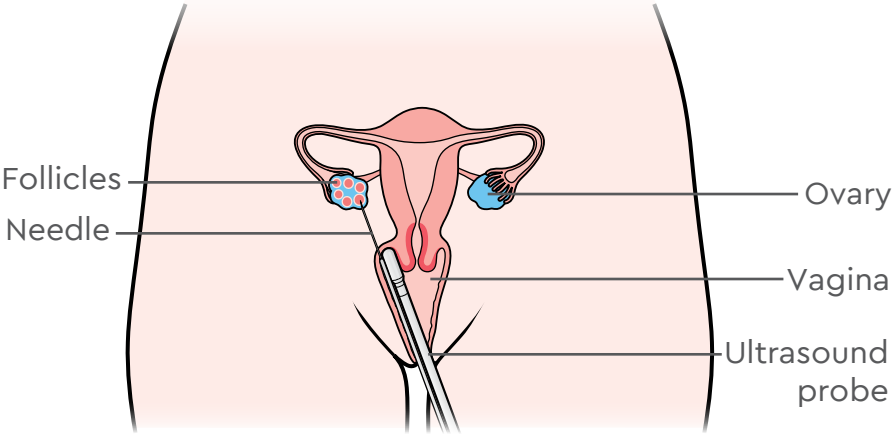
If you cannot or do not want to have the scan through the vagina, the probe can be placed against the tummy (abdomen).

Collecting the eggs

A doctor collects the eggs when they are mature. This is usually about 14 days after the start of ovarian stimulation.

The doctor uses a vaginal ultrasound probe to guide a needle through the top of the vagina and into the ovaries. They collect the eggs through the needle. This is done under sedation to make the procedure more comfortable. The collection takes about 15 to 20 minutes. You can usually go home after a few hours.

Egg collection



Freezing the eggs

After the eggs have been collected, they can be frozen and stored. There are different ways to do this. The most successful way to freeze eggs is a method called vitrification. This involves freezing the eggs very quickly.

Vitrification is not available at every fertility clinic. Talk to your fertility doctor about your options.

"I had my eggs frozen. I had not even considered it, but when I went to see my doctor, he said before treatment that lots of people might not want to do it but change their mind afterwards. "

Anglee, diagnosed with
non-Hodgkin lymphoma

Storing embryos

This is another common and effective way of preserving fertility. You have the same process for collecting eggs. After the eggs have been collected, they are mixed with sperm to encourage fertilisation. This is called in vitro fertilisation (IVF) – page 77. The fertilised eggs develop into embryos. The embryos are then frozen and stored for later use.

Embryos can be slowly frozen or quickly frozen by vitrification. Both methods are safe. Many babies have been born using frozen embryos.

If a partner provided sperm to create the embryos, they have equal rights in deciding what happens to the embryos. If they withdraw their consent for you to use the embryos in the future, you will not be able to use them.

If a partner did not provide sperm or eggs for the embryos, but you signed the consent forms together as a couple, they may still have some rights. For example, a lesbian couple may give consent as a couple to create embryos. Both partners may have rights to decide what happens to the embryos.

Even if you have a partner, you can still choose to freeze your unfertilised eggs. You do not have to use the eggs to create embryos straight away. If you and your partner split up, your partner has no rights to decide how the eggs are used in the future.

Storing tissue from an ovary

For some people, it may be possible to collect and store tissue from an ovary. This is called ovarian cryopreservation. It is not a standard treatment and is only available at a few clinics in the UK.

Even small pieces of ovarian tissue can contain thousands of immature eggs. After cancer treatment, the tissue can be put back into the body during a small operation. This may make it possible to get pregnant or start a pregnancy with fertility treatment.

To collect the ovarian tissue, you have keyhole surgery before cancer treatment starts. The surgeon removes pieces or all of 1 ovary. The collected tissue is frozen and stored.

Ovarian cryopreservation may be an option if you:

- have to start cancer treatment quickly
- cannot have ovarian stimulation drugs – pages 56 to 58
- have not reached puberty (started having periods).

It may not be suitable if there is any risk of there being cancer cells in the ovary.

Ovarian cryopreservation is a newer method. It is not widely available in the UK. Only a few babies in the world have been born using stored ovarian tissue.

Comparing fertility preservation methods

I am thinking about storing...	Can I do this before puberty?	Can I do this after puberty?	How long does it take to collect?
Sperm	No	Yes	A few days.
Tissue from a testicle (testicular cryopreservation)	Yes	Yes	A few days.
Eggs	No	Yes	At least 2 weeks.
Embryos	No	Yes	At least 2 weeks.
Tissue from an ovary (ovarian cryopreservation)	Yes	Yes	A few days.

How is this used to start a pregnancy?	Other things to think about
The sperm are thawed (unfrozen) and may be used to fertilise an egg with IUI, IVF or ICSI – pages 77 to 79.	Collecting and storing sperm is a safe and simple process. It has been used for many years. If you have difficulty providing sperm by masturbation, there may be other ways to collect samples (pages 54 to 55).
Not yet known.	Collecting testicular tissue involves a small operation under a general anaesthetic (page 55). It is only available at a few clinics in the UK. In the future, there may be ways to use the stored tissue to produce sperm. But research is still at an early stage. Testicular tissue has not yet been used to start a pregnancy. Doctors do not fully know the risks involved.
The eggs are thawed (unfrozen) and may be fertilised using IVF or ICSI to create embryos. An embryo is then transferred to the womb.	You usually need to have ovarian stimulation before eggs are collected (pages 56 to 57). This process is not always possible or suitable for everyone. You are the person who has a right in deciding how the eggs are used in the future. You do not need sperm from a partner or donor until you are ready to try and fertilise the eggs.
An embryo is thawed (unfrozen) and transferred to the womb – page 79.	You usually need to have ovarian stimulation before eggs are collected to make embryos (page 61). This process is not always possible or suitable for everyone. If a partner provided sperm or consent to create the embryos with you, they also have rights in deciding how the embryos are used in the future.
You have a small operation to put the tissue back into the body. You may then be able to start a pregnancy by having vaginal sex, or with fertility treatments such as IUI or IVF.	This option may not be suitable if there is any risk of there being cancer cells in the ovary. Collecting ovarian tissue involves a small operation under a general anaesthetic (page 62). It is only available at a few clinics in the UK. You do not need to have ovarian stimulation. You do not need sperm from a partner or donor to be able to store ovarian tissue. Only a few babies in the world have been born using this method.

After cancer treatment

Making plans

It can take time to move forward with life after cancer treatment. The decision to try to have a baby is a big one for anyone to make. You may have worries and questions about fertility that did not seem important before cancer treatment. When you are ready, you can talk to your cancer doctor again for more advice.

If you were told your fertility might recover after cancer treatment, your cancer doctor can give you more information about this. They can explain when your fertility might come back and what to expect. They can help you think about when might be best for you to try to start a pregnancy.

Often it is hard to know exactly how or when your fertility will recover. You may decide to have fertility tests to get more information (pages 72 to 73). Your cancer doctor can refer you to the fertility specialist for further discussions.

Some people will need fertility treatment to be able to start a pregnancy (pages 74 to 82). This may not be a straightforward decision for everyone. Sometimes moral, cultural or religious views about fertility treatment can make the decision complicated.

Talking to other people can be helpful while you are thinking about your options. You may want to talk to someone close to you or from your community. You can also talk to the staff at the fertility clinic.

You might find it helpful to talk to someone who has had cancer and understands what you are going through. You can join our Online Community to talk to other people who are going through the same thing. Visit **macmillan.org.uk/community**

It is important to get the information you need about your situation as you start making plans. You can learn more about other useful organisations on pages 96 to 103.

How soon can I try to start a pregnancy after cancer treatment?

If you are planning a pregnancy after cancer treatment, there are several things to think about. Your cancer doctor can talk to you about this and give you detailed information. They can give you advice about when it is safest to start trying. They can explain any other things you may need to think about.

Radiotherapy and some cancer drug treatments can affect sperm and eggs for a time after treatment has finished (pages 22 to 46). Your cancer doctor may advise you to wait for a time. This is to make sure you are producing healthy sperm or eggs.

You may also want information about the risk of cancer coming back. Nobody can tell you exactly what will happen in the future. But your cancer doctor may be able to give you information about your level of risk over time. For example, the risk of cancer coming back usually gets lower with time. Some people decide to wait until their risk is likely to be lower before trying to start a pregnancy.

Ovarian reserve and timing a pregnancy

Some cancer treatments affect the number of eggs in the ovaries. This is called your ovarian reserve. A low ovarian reserve may mean there is less time to start a pregnancy. The menopause may start earlier because of the treatment you had.

Fertility tests can help estimate your ovarian reserve (pages 72 to 73). Your cancer doctor or GP can refer you to a fertility specialist for advice about your fertility treatment options.

Being pregnant after cancer treatment

Some cancer treatments can increase the risk of problems during pregnancy or when giving birth. Your cancer doctor can give you advice about this based on your age and the type of cancer and cancer treatment you have had.

They can talk to you about:

- how long you may need to recover and be physically fit for pregnancy
- any health checks you may need before you try to get pregnant
- any additional risks you may have during pregnancy and ways to manage these risks.

Can being pregnant make cancer come back?

Research suggests that for almost all types of cancer, pregnancy does not make cancer more likely to come back. If you have one of a rare group of tumours called gestational trophoblastic disease, you may have a slightly higher risk that the tumour may come back in pregnancy. Your cancer doctor can give you more information.

Can cancer be passed to children?

Cancer cannot be passed from parent to child.

A small number of people carry an inherited gene change that increases their risk of getting cancer. An inherited gene change can be passed from parent to child. It is sometimes the reason for a pattern of certain types of cancer in a family. This is rare. Most cancers are not caused by gene changes that run in a family.

We have more information about cancer and genetics in our booklet **Cancer and genetics** (page 90).

Talk to your doctor if you are worried about the risk of cancer in your family.

Fertility testing

Semen tests

After cancer treatment, you can have your semen tested. This is called semen analysis. The test checks whether you are producing healthy sperm and the amount you are producing. Your cancer doctor or nurse can explain when you can have this test.

Your cancer doctor or GP can arrange an appointment for you to give a sample for testing. You usually give a sample by masturbation at home or at a clinic. The clinic will give you information about this.

Your sample is then checked in a laboratory under a microscope. Your doctor can tell you what to expect and when your results will be available. A fertility specialist will talk to you about the results of the test.

Semen testing is available free on the NHS. You can also pay to have it privately. If needed, you can have the test again to see whether things have changed.

Ovarian reserve tests

The number of eggs in the ovaries is called your ovarian reserve. After cancer treatment, you may have tests that help your fertility doctor measure your ovarian reserve. These tests can also help show whether the ovaries are releasing eggs and whether you may have started the menopause (page 12).

Usually, people are only referred to a fertility clinic after 1 to 2 years of trying to start a pregnancy. If you have had cancer treatment, you should be referred for ovarian reserve testing sooner than this. This is because you have a higher risk of an early menopause after cancer treatment.

You may have:

- blood tests to check your hormone levels – your doctor will explain when these should be done
- an ultrasound scan to look at follicles in the ovaries – this is called an antral follicle count.

Ultrasound uses sound waves to check how the follicles containing the eggs are developing in the ovaries. The ultrasound probe goes inside the vagina. This is not usually painful. The probe is about as wide as a large tampon.

If you take the contraceptive pill, hormone replacement therapy (HRT) or gender-affirming hormones, it can affect the results of some of these tests. Let your doctor know if you are taking any of these. They may ask you to stop taking them before having the tests.

The results do not always clearly show whether you will be able to start a pregnancy. But they may help you decide what to do next. They may help you decide whether you want to find out more about fertility treatment (pages 74 to 82).

Some people only start having periods again months or years after cancer treatment ends. This is more likely if you are younger. But it also depends on the treatment you have had. If your periods change, you can have these tests again. Your doctor will talk to you about the options available to you.

Fertility treatment after cancer

After cancer treatment, you may decide you want information about starting a pregnancy with fertility treatment. This may not be a straightforward decision for everyone. Sometimes moral, cultural or religious views about fertility treatment can make the decision complicated.

Your cancer doctor or GP can refer you to a fertility clinic for advice and support. At the clinic, the specialist will talk to you about your fertility and treatments that may help. If you are planning to start a pregnancy with a partner, they should also be involved.

Starting a pregnancy with fertility treatment can be an option for:

- single people
- straight couples
- same-sex couples
- people of all gender identities.

Whatever your situation, it is important to get the right information. This will help you make decisions that are right for you.

The fertility specialist will answer your questions and arrange any tests you need (pages 72 to 73). They will also ask you questions about your lifestyle. There might be lifestyle changes you can make to help improve your fertility, such as stopping smoking.

Unfortunately, fertility treatment does not always result in a pregnancy. The doctor will give you information about the success rates of different types of fertility treatment in your situation.

This can be a lot of information to take in. A specialist fertility counsellor at the clinic can support you and any partner as you think about the information. They can help you make decisions about what you want to do.

Many children have been born using fertility treatments. There do not seem to be any long-term health risks for the child. Your fertility doctor can give you more information about any possible risks of these treatments.

Where to get fertility treatment

This depends on whether you have NHS treatment or private treatment.

All UK fertility clinics are licensed by the Human Fertilisation & Embryology Authority (HFEA). You can find advice about choosing a clinic and details of clinics on the HFEA website. Visit **hfea.gov.uk**

Your GP can tell you which clinics offer NHS treatment in your area. If you have already had fertility preservation or fertility tests, you may be able to go back to the same clinic.

For private treatment, you can choose a clinic. You can arrange this yourself, but it can be useful to have a referral letter from your GP.

Cost of fertility treatment

The NHS may pay for a certain number of fertility treatments. The funding rules about this are different in different areas of the UK. If you decide to have fertility treatment, it is important to remember that the funding rules apply to both you and any partner you have fertility treatment with.

Your GP, cancer doctor or fertility doctor can give you information about this.

Private fertility treatment

Some people choose to pay for some, or all, of their fertility treatment privately. You may be thinking about this if:

- you are not eligible for NHS treatment
- you are worried about NHS waiting times
- the NHS does not provide the treatment you want or need.

Fertility treatment is expensive and there are no standard charges for private treatment. You can contact clinics directly to find out which treatments they offer, how much they charge and their success rates.

Types of fertility treatment

Intra-uterine insemination (IUI)

For IUI, the fertility doctor or nurse puts collected sperm directly into the womb. They use a fine tube called a catheter. They pass this through the cervix and into the womb (page 6). If an egg is fertilised, a pregnancy may develop.

IUI is usually timed for the day after the ovary is most likely to release an egg. The IUI procedure only takes a few minutes. It usually feels similar to having a cervical smear test.

Good-quality sperm is needed for IUI. It may not be an option using sperm that was collected and frozen.

In vitro fertilisation (IVF)

IVF treatment happens in a laboratory. Collected eggs and sperm are mixed together in a dish. If suitable embryos develop over the next few days, 1 or sometimes 2 can be transferred to the womb to see whether a pregnancy develops. This is called an embryo transfer.

The fertility doctor or nurse passes a catheter through the cervix and into the womb to do this. Good-quality embryos can also be frozen for future use.

"It is the full IVF process, but you are doing it in a really short time frame. I have had friends go through IVF and I know what it was like for them to go through that. The fertility nurse was brilliant. "

Kimberley, diagnosed with breast cancer

Intra-cytoplasmic sperm injection (ICSI)

ICSI treatment happens in a laboratory. Under a microscope, the specialist uses a fine needle to inject 1 sperm directly into each mature egg. If suitable embryos develop, 1 or sometimes 2 can be transferred to the womb through embryo transfer to see whether a pregnancy develops. Good-quality embryos can also be frozen for future use.

Embryo transfer

If suitable embryos develop with IVF or ICSI, the fertility doctor or nurse places 1 or sometimes 2 embryos into the womb to see whether a pregnancy develops. They use a catheter to do this. They pass this through the cervix and into the womb. Any other good-quality embryos can be frozen for future use.

Using fresh or stored sperm, eggs or embryos

Fertility treatments can use fresh or stored sperm, eggs or embryos. Stored samples will be carefully thawed (unfrozen) in a laboratory when needed.

Sperm samples that have been collected using surgery are used with ICSI. Sperm samples that have been frozen may be suitable for IUI, IVF or ICSI, but this can depend on the quality of the sample.

Using a donor

Some people use donated sperm, eggs or embryos with fertility treatment. This might be an option if:

- your or your partner's fertility is affected and you do not have stored sperm, eggs or embryos to use
- you are in a same-sex relationship
- you are single.

People usually have questions about using a donor. The fertility clinic will offer you counselling to help you think about the possible issues.

You may have to wait to find a suitable donor in the UK. Using a donor may not be funded by the NHS in some areas. Some people decide to pay for a donor in the UK or from another country. Your fertility clinic can explain what is available.

Donors

Everyone who donates sperm, eggs or embryos in the UK sees a doctor at the fertility clinic before they donate. The doctor examines them and asks them questions about their medical history. The doctor also tests them for infections, such as HIV, hepatitis B, hepatitis C and some genetic conditions.

You can be matched to a donor. For example, you can be matched by:

- ethnic origin
- eye colour
- hair colour
- physical build.

All UK donors must agree to their details being available in the future. Any child born from fertility treatment using a donor can ask for the donor's details when they are 18 years old.

Some people ask a family member to be their donor. They will have the same tests as any other donor.

Using a surrogate

Surrogacy means that another person gives birth to a baby for you. They are called a surrogate or host. The pregnancy may be started using IUI or IVF. This might be an option if you:

- are not able to carry a pregnancy
- have a partner who is not able to carry a pregnancy.

Surrogacy pregnancies can be started using the surrogate's own eggs. It is also possible to use your own eggs or embryos, or donor eggs or embryos.

Surrogacy is not common in the UK. It can be expensive, and the laws in the UK are complicated. Organisations such as Childlessness Overcome Through Surrogacy (COTS), Surrogacy UK and Brilliant Beginnings can give you more information and support – pages 96 to 97.

If fertility treatment does not work

Unfortunately, there is always a risk that fertility treatment will not be successful. This is a risk for anyone having fertility treatment, not just people affected by cancer.

Your fertility doctor will explain your chances of success before you start any fertility treatment. But it is still upsetting if treatment does not work.

Some people decide not to try again. Or they may think about other options such as adoption or fostering (pages 84 to 85). Others decide they want to continue with fertility treatment.

These can be hard decisions to make. Fertility treatment can be stressful. It can be hard physically as well as emotionally. If you are paying for treatment, it is also expensive.

A counsellor in your fertility clinic can offer support and advice. There are also organisations that offer counselling, such as the British Infertility Counselling Association (BICA) – page 99.

Your healthcare team might know about support groups in your area. Or you can join our Online Community to talk to other people who are going through the same thing. Visit **macmillan.org.uk/community**

Other options

Some people cannot have fertility treatment. And some decide they do not want treatment or prefer to become a parent another way.

Make sure you get all the support and information you need to make the right decision for you. It may also help to:

- talk about your options with family or friends
- talk to someone who has become a parent in a different way
- find out more from a support organisation (pages 96 to 103).

Adoption and fostering

Adoption means becoming the legal parent of a child. Fostering means looking after a child who cannot stay with their own family. Fostering can be short term or long term.

People from all backgrounds can apply to adopt or foster a child. Sexual orientation, gender or disability should not matter. You do not have to be in a relationship or married to apply.

Adoption and fostering can be rewarding. They are usually arranged through an organisation or local authority.

If you want to find out more, ask:

- your social worker, if you have one
- your local council or social services department – you can look online for details or ask your GP
- an organisation such as Action for Children or Adoption UK – page 98.

Co-parenting

Co-parenting is an agreement to raise a child with someone who is not your partner. It is often used to describe couples who share parenting after splitting up. But it can also describe an agreement to conceive and raise a child with someone who is not your partner.

The laws about who has parental responsibility and rights in this situation can be complicated. You should get legal advice if you are thinking about co-parenting.

Not having children

Some people decide not to have children. This may be a clear choice they are happy with. Sometimes it is more complicated. There is no right or wrong way to feel. Everyone is different.

If you want to talk to someone or are trying to cope with difficult feelings, we have more information about getting support on page 86.

Your GP may also be able to help. Or they may arrange a counsellor for you to talk to. You can also call us on **0808 808 00 00**.

Getting support

Fertility after cancer treatment can be complicated and difficult to think about. You may:

- have questions or want more information
- need support with difficult feelings
- want to talk through the decisions you are making.

There is often support that can help.

You may find it helps to talk to someone close to you. If you prefer to talk to a counsellor, your GP or cancer doctor can arrange this. Many hospitals also have specialist nurses who can offer support. Fertility clinics have a counsellor you can talk to.

Or you may want to talk to other people in a similar situation. Some organisations can provide this, as well as specialist advice and counselling (pages 96 to 103).

Or you can talk to people online. Our Online Community is a good place to start. Visit **macmillan.org.uk/community**

You can also talk to our cancer support specialists free on **0808 808 00 00**, 7 days a week, 8am to 8pm.

Further information

About our information

We provide expert, up-to-date information about cancer. And all our information is free for everyone.

Order what you need

You may want to order more booklets or leaflets like this one. Visit **be.macmillan.org.uk** or call us on **0808 808 00 00**.

We have booklets about different cancer types, treatments and side effects. We also have information about work, financial issues, diet, life after cancer treatment and information for carers, family and friends.

Online information

All our information is also available online at **macmillan.org.uk/information-and-support** You can also find videos featuring stories from people affected by cancer, and information from health and social care professionals.

Other formats

We also provide information in different languages and formats, including:

- audiobooks
- Braille
- British Sign Language
- easy read booklets
- eBooks
- large print
- translations.

Find out more at **macmillan.org.uk/otherformats**

If you would like us to produce information in a different format for you, email us at **cancerinformationteam@macmillan.org.uk** or call us on **0808 808 00 00**.

The language we use

We want everyone affected by cancer to feel our information is written for them.

We try to make sure our information is as clear as possible. We use plain English, avoid jargon, explain any medical words, use illustrations to explain text, and make sure important points are highlighted clearly.

We use gender-inclusive language and talk to our readers as 'you' so that everyone feels included. Where clinically necessary, we use the terms 'men' and 'women' or 'male' and 'female'. For example, we do so when talking about parts of the body or mentioning statistics or research about who is affected. Our aims are for our information to be as clear and relevant as possible for everyone.

You can read more about how we produce our information at **macmillan.org.uk/ourinfo**

Other ways we can help you

At Macmillan, we know how a cancer diagnosis can affect everything, and we are here to support you.

Talk to us

If you or someone you know is affected by cancer, talking about how you feel and sharing your concerns can really help.

Macmillan Support Line

Our free, confidential phone line is open 7 days a week, 8am to 8pm. We can:

- help with any medical questions you have about cancer or your treatment
- help you access benefits and give you financial guidance
- be there to listen if you need someone to talk to
- tell you about services that can help you in your area.

Our trained cancer information advisers can listen and signpost you to further support. Call us on **0808 808 00 00**. We are open 7 days a week, 8am to 8pm.

You can also email us, or use the Macmillan Chat Service via our website. You can use the chat service to ask our advisers about anything that is worrying you. Tell them what you would like to talk about so they can direct your chat to the right person. Click on the 'Chat to us' button, which appears on pages across the website. Or go to **macmillan.org.uk/talktous**

If you would like to talk to someone in a language other than English, we also offer an interpreter service for our Macmillan Support Line. Call **0808 808 00 00** and say, in English, the language you want to use. Or send us a web chat message saying you would like an interpreter. Let us know the language you need and we'll arrange for an interpreter to contact you.

Information centres

Our information and support centres are based in hospitals, libraries and mobile centres. Visit one to get the information you need and speak with someone face to face. If you would like a private chat, most centres have a room where you can speak with someone confidentially.

Find your nearest centre at **macmillan.org.uk/informationcentres** or call us on **0808 808 00 00**.

Help with money worries

Having cancer can bring extra costs such as hospital parking, travel fares and higher heating bills. If you have been affected in this way, we can help. Please note the opening times may vary by service.

Financial guidance

Our financial team can give you guidance on mortgages, pensions, insurance, borrowing and savings.

Help accessing benefits

Our welfare rights advisers can help you find out what benefits you might be entitled to, and help you complete forms and apply for benefits. They can also tell you more about other financial help that may be available to you. We can also tell you about benefits advisers in your area. Visit **macmillan.org.uk/financialsupport** to find out more about how we can help you with your finances.

Help with energy costs

Our energy advisers can help if you have difficulty paying your energy bills (gas, electricity and water). They can help you get access to schemes and charity grants to help with bills, advise you on boiler schemes and help you deal with water companies.

Macmillan Grants

Macmillan offers one-off payments to people with cancer. A grant can be for anything from heating bills or extra clothing to a much-needed break.

Call us on **0808 808 00 00** to speak to find out more about Macmillan Grants.

Help with work and cancer

Whether you are an employee, a carer, an employer or are self-employed, we can provide support and information to help you manage cancer at work. Visit **macmillan.org.uk/work**

Work support

Our dedicated team of work support advisers can help you understand your rights at work. Call us on **0808 808 00 00** to speak to a work support adviser.

Talk to others

No one knows more about the impact cancer can have on your life than those who have been through it themselves. That is why we help bring people together in their communities and online.

Support groups

Whether you are someone living with cancer or a carer, family member or friend, we can help you find support in your local area, so you can speak face to face with people who understand. Find out about support groups in your area by calling us or by visiting **macmillan.org.uk/selfhelpandsupport**

Online Community

Thousands of people use our Online Community to make friends, blog about their experiences and join groups to meet other people going through the same things. You can access it any time of day or night. Share your experiences, ask questions, or just read through people's posts at **macmillan.org.uk/community**

You can also use our Ask an Expert service on the Online Community. You can ask a financial guide, cancer information nurse, work support advisor or an information and support advisor any questions you have.

Macmillan healthcare professionals

Our nurses, doctors and other health and social care professionals give expert care and support to individuals and their families. Call us or ask your GP, consultant, district nurse or hospital ward sister if there are any Macmillan professionals near you.

Other useful organisations

There are lots of other organisations that can give you information or support. Details correct at time of printing.

Fertility organisations

Brilliant Beginnings

Tel **0207 050 6875**
www.brilliantbeginnings.co.uk
Surrogacy agency based in the UK providing support for people thinking about surrogacy.

Cancer, Fertility and Me

www.cancerfertilityandme.org.uk
Online decision-making aid that aims to help women with cancer think about the treatments that may help to preserve their fertility.

Childlessness Overcome Through Surrogacy (COTS)

Tel **0333 772 1549**
www.surrogacy.org.uk
Membership community providing support and advice about surrogacy.

Donor Conception Network

Tel **0207 278 2608**
www.dcnetwork.org
Provides information and support about donor conception.

Fertility Network UK

Helpline **0121 323 5025**
www.fertilitynetworkuk.org
Provides information and support for people affected by fertility issues.

Human Fertilisation & Embryology Authority (HFEA)

Email **enquiriesteam@hfea.gov.uk**
www.hfea.gov.uk
The UK fertility regulator. Provides information about fertility preservation, treatments and clinics in the UK, including information for LGBTQ+ people.

Royal College of Obstreticians & Gynaecologists

www.rcog.org.uk
Works to improve healthcare for women and offers health guidance on a wide range of issues and life events.

Surrogacy UK

www.surrogacyuk.org
Membership community providing support and advice about surrogacy.

Teenagers and Young Adults with Cancer

www.tyac.org.uk
Provides information and support for teenagers and young adults with cancer, including information about fertility.

Parenting organisations

Action for Children

www.actionforchildren.org.uk
Protects and supports children and young people. Offers parenting support and information about fostering and adoption on its website.

Adoption UK

Helpline **0300 666 0006**
www.adoptionuk.org
Provides information about and support for becoming a parent through adoption.

The Fostering Network

www.thefosteringnetwork.org.uk
Provides advice and information for foster carers and people considering fostering.

Gingerbread

Helpline **0808 802 0925**
www.gingerbread.org.uk
Provides information and support for single parents.

New Family Social

www.newfamilysocial.org.uk
Provides information and support for LGBTQ+ people about adoption and fostering.

Counselling and emotional support

British Association for Counselling and Psychotherapy (BACP)

Tel **0145 588 3300**
www.bacp.co.uk
Promotes awareness of counselling and signposts people to appropriate services across the UK. You can also search for a qualified counsellor on the 'How to find a therapist' page.

British Infertility Counselling Association (BICA)

www.bica.net
Provides information about counselling for fertility issues and choosing a counsellor. Has a database of specialist fertility counsellors.

UK Council for Psychotherapy (UKCP)

Tel **0207 014 9955**
www.psychotherapy.org.uk
Holds the national register of psychotherapists and psychotherapeutic counsellors, listing practitioners who meet exacting standards and training requirements.

General cancer support organisations

Cancer Black Care

Tel **0208 961 4151**
Offers UK-wide information and support for people from Black and minority ethnic communities who have cancer. Also supports their friends, carers and families.

Cancer Focus Northern Ireland

Helpline **0800 783 3339**
www.cancerfocusni.org
Offers a variety of services to people affected by cancer in Northern Ireland.

Cancer Research UK

Helpline **0808 800 4040**
www.cancerresearchuk.org
A UK-wide organisation that has patient information on all types of cancer. Also has a clinical trials database.

Cancer Support Scotland

Tel **0800 652 4531**
www.cancersupportscotland.org
Runs cancer support groups throughout Scotland. Also offers free complementary therapies and counselling to anyone affected by cancer.

Macmillan Cancer Voices

www.macmillan.org.uk/cancervoices
A UK-wide network that enables people who have or have had cancer, and those close to them such as family and carers, to speak out about their experience of cancer.

Maggie's

Tel **0300 123 1801**
www.maggies.org
Has a network of centres throughout the UK. Provides free information about cancer and financial benefits. Also offers emotional and social support to people with cancer, their family and friends.

Penny Brohn UK

Helpline **0303 300 0118**
www.pennybrohn.org.uk
Offers physical, emotional and spiritual support across the UK, using complementary therapies and self-help techniques.

Tenovus

Helpline **0808 808 1010**
www.tenovuscancercare.org.uk
Aims to help everyone in the UK get equal access to cancer treatment and support. Funds research and provides support such as mobile cancer support units, a free helpline, benefits advice and an online 'Ask the nurse' service.

Emotional and mental health support

Mind

Helpline **0300 123 3393**
www.mind.org.uk
Provides information, advice and support to anyone with a mental health problem through its helpline and website.

Samaritans

Helpline **116 123**
Email **jo@samaritans.org**
www.samaritans.org
Provides confidential and non-judgemental emotional support, 24 hours a day, 365 days a year, for people experiencing feelings of distress or despair.

LGBT-specific support

LGBT Foundation

Tel **0345 330 3030**
www.lgbt.foundation
Provides a range of services to the LGBT community, including a helpline, email advice and counselling. The website has information on various topics including sexual health, relationships, mental health, community groups and events.

Live Through This

www.livethroughthis.co.uk
A safe space for anybody who identifies as part of the queer spectrum and has had an experience with any kind of cancer at any stage. Also produces resources about LGBT cancer experiences. LTT runs a peer support group with Maggie's Barts.

Stonewall

www.stonewall.org.uk
Campaigns for equality for people from the LGBT community. Has a section on parenting on its website.

Switchboard LGBT+ Helpline

Tel **0900 019 9100**
www.switchboard.lgbt
Charity providing support on the phone, and through email and instant messaging services to lesbian, gay, bisexual and trans communities.

Cancer registries

The cancer registry is a national database that collects information on cancer diagnoses and treatment. This information helps the NHS and other organisations plan and improve health and care services. There is one in each country in the UK:

National Cancer Registration and Analysis Service (England)

digital.nhs.uk/ndrs/patients

Scottish Cancer Registry and Intelligence Service (SCRIS)

Tel **0345 646 0238**
beta.isdscotland.org/topics/scottish-cancer-registry-and-intelligence-service-scris

Welsh Cancer Intelligence and Surveillance Unit (WCISU)

Tel **0292 010 4278**
phw.nhs.wales/services-and-teams/welsh-cancer-intelligence-and-surveillance-unit-wcisu

Northern Ireland Cancer Registry

Tel **0289 097 6028**
www.qub.ac.uk/research-centres/nicr

Your notes and questions

Disclaimer

We make every effort to ensure that the information we provide is accurate and up to date, but it should not be relied upon as a substitute for specialist professional advice tailored to your situation. So far as is permitted by law, Macmillan does not accept liability in relation to the use of any information contained in this publication, or third-party information or websites included or referred to in it. Some photos are of models.

Thanks

This booklet has been written, revised and edited by Macmillan Cancer Support's Cancer Information Development team. It has been approved by our Chief Medical Editor, Prof Tim Iveson, Consultant Medical Oncologist.

With thanks to: Clare Akers, Clinical Nurse Specialist; Dr Alison May Berner, Medical Oncologist; Stacey Bryan, Sub-Specialist Trainee in Gynaecological Oncology; Marco Gaudoin, Consultant Gynaecologist and Medical Director, GCRM Fertility; Nitish Narvekar, Consultant Gynaecologist Specialist in Reproductive Medicine; Stewart O'Callaghan, Chief Executive, Live Through This; and Valerie L Peddie, Midwife and Nurse Consultant, Fertility Preservation.

Thanks also to the people affected by cancer who reviewed this edition, and those who shared their stories.

We welcome feedback on our information. If you have any, please contact **cancerinformationteam@macmillan.org.uk**

Sources

Below is a sample of the sources used in our fertility information. If you would like more information about the sources we use, please contact us at **cancerinformationteam@macmillan.org.uk**

Lambertini M, Peccatori FA, Demeestere I, et al. Fertility preservation and post-treatment pregnancies in post-pubertal cancer patients: ESMO Clinical Practice Guidelines. Annals of Oncology, 2020; 31, 12, 1664–1678.

National Institute for Health and Care Excellence. Fertility problems: assessment and treatment. [Internet]. 2017. Available from www.nice.org.uk/guidance/CG156 [accessed November 2022].

Can you do something to help?

We hope this booklet has been useful to you. It is just one of our many publications that are available free to anyone affected by cancer. They are produced by our cancer information specialists who, along with our nurses, benefits advisers, campaigners and volunteers, are part of the Macmillan team. When people are facing the toughest fight of their lives, we are here to support them every step of the way.

We want to make sure no one has to go through cancer alone, so we need more people to help us. When the time is right for you, here are some ways in which you can become a part of our team.

5 ways you can help someone with cancer

1. **Share your cancer experience**
   Support people living with cancer by telling your story, online, in the media or face to face.

2. **Campaign for change**
   We need your help to make sure everyone gets the right support. Take an action, big or small, for better cancer care.

3. **Help someone in your community**
   A lift to an appointment. Help with the shopping. Or just a cup of tea and a chat. Could you lend a hand?

4. **Raise money**
   Whatever you like doing, you can raise money to help. Take part in one of our events or create your own.

5. **Give money**
   Big or small, every penny helps.
   To make a one-off donation see over.

Please fill in your personal details

Mr/Mrs/Miss/Other

Name

Surname

Address

Postcode

Phone

Email

Please accept my gift of £
(Please delete as appropriate)

I enclose a cheque / postal order / Charity Voucher made payable to Macmillan Cancer Support
OR debit my:
Visa / MasterCard / CAF Charity Card / Switch / Maestro

Card number

Valid from

Expiry date

Issue no

Security number

Signature

Date / /

Do not let the taxman keep your money

Do you pay tax? If so, your gift will be worth 25% more to us – at no extra cost to you. All you have to do is tick the box below, and the tax office will give 25p for every pound you give.

☐ I am a UK tax payer and I would like Macmillan Cancer Support to treat all donations I make or have made to Macmillan Cancer Support in the last 4 years as Gift Aid donations, until I notify you otherwise.

I understand that if I pay less Income Tax and/or Capital Gains Tax than the amount of Gift Aid claimed on all my donations in that tax year it is my responsibility to pay any difference. I understand Macmillan Cancer Support will reclaim 25p of tax on every £1 that I give.

Macmillan Cancer Support and our trading companies would like to hold your details in order to contact you about our fundraising, campaigning and services for people affected by cancer. If you would prefer us not to use your details in this way please tick this box. ☐

In order to carry out our work we may need to pass your details to agents or partners who act on our behalf.

If you would rather donate online go to **macmillan.org.uk/donate**

Registered with FUNDRAISING REGULATOR

Please cut out this form and return it in an envelope (no stamp required) to: Supporter Donations, Macmillan Cancer Support, FREEPOST LON15851, 89 Albert Embankment, London SE1 7UQ

MACMILLAN CANCER SUPPORT

This booklet is about how cancer and treatments can affect fertility. Fertility means being able to start a pregnancy. It is for anyone who needs information about fertility before, during or after treatment.

The booklet gives information about preserving fertility, fertility testing, fertility treatments to start a pregnancy and other options for becoming a parent.

At Macmillan, we give people with cancer everything we've got. If you are diagnosed, your worries are our worries. We will help you live life as fully as you can.

For information, support or just someone to talk to, call **0808 808 00 00** or visit **macmillan.org.uk**

Would you prefer to speak to us in another language? Interpreters are available. Please tell us in English the language you would like to use. Are you deaf or hard of hearing? Call us using NGT (Text Relay) on **18001 0808 808 00 00**, or use the NGT Lite app.

Need information in different languages or formats? We produce information in audio, eBooks, easy read, Braille, large print and translations. To order these, visit **macmillan.org.uk/otherformats** or call our support line.

Trusted Information Creator
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