

Bodyworks

Your guide to
understanding reproduction



Bodyworks

This booklet is about the female and male reproductive systems. It can help you understand:

- the reproductive organs and how they work
- the menstrual cycle (ovulation and periods)
- conception (getting pregnant)
- how contraception can prevent pregnancy.

This booklet is about how people reproduce through having sex. There are other ways that people reproduce, such as in-vitro fertilisation (IVF).

A note on gender

Not everyone with a male body is a man and not everyone with a female body is a woman. The information in this booklet is for people of all genders including trans and non-binary people.

Female bodies

The female reproductive system is made up of organs inside and outside the body. They're in the lower abdomen – the part of the body below the tummy button. This is often called the pelvic area.

The external organs (outside the body)

The external organs are known as the vulva. They include the:

- entrance to the vagina
- urethral opening (where urine comes out)
- labia (vaginal lips)
- clitoris.

The internal organs (inside the body)

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

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The female reproductive organs outside the body

The **vulva** includes the opening to the **vagina**, the opening to the **urethra** (tube that you urinate – pee – through) the inner and outer lips (**labia**) and the **clitoris**. The external, visible part of the clitoris is found towards the front of the vulva – it's highly sensitive and when stimulated can make you feel sexually aroused and lead to orgasm. Most of the clitoris is inside the body. It extends to the front wall of the vagina.

Hormones and eggs – did you know?

- The female sex hormones, **estrogen** and **progesterone**, are responsible for female characteristics such as body shape, breasts and the **menstrual cycle**.
- An ovary contains about two million eggs at birth.
- During your reproductive life fewer than 500 eggs will be released at ovulation.
- As you get older you have fewer and lower quality eggs. This can make it more difficult to get pregnant.

The female reproductive organs inside the body

Ovaries

Female bodies have two **ovaries**, one on each side of the **uterus** (womb). Ovaries are the size and shape of almonds. They contain **ova** (eggs) in structures called **follicles**. The ovaries also produce the two female sex hormones – estrogen and progesterone. A hormone is a chemical messenger which is released in the blood to tell different organs to do certain things. Sex hormones cause sexual development and control reproduction.

The fallopian tubes

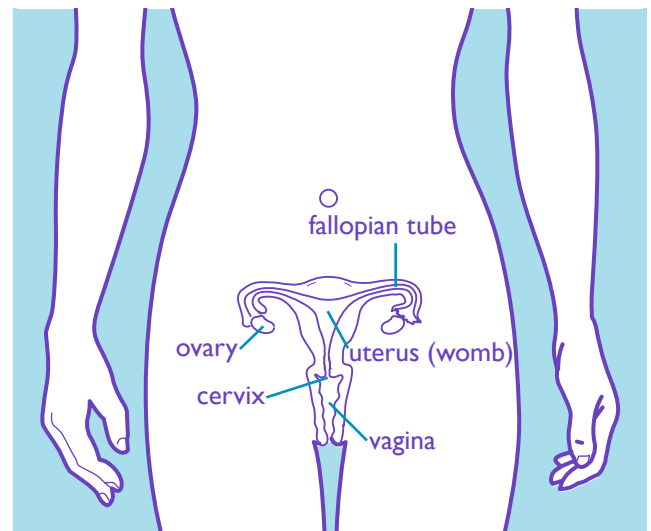
There are two fallopian tubes – one on each side of the uterus. Each tube is about 10–12.5cm long and lies close to the ovary. When an egg is released by the ovary, it's picked up by the funnel-like end of the fallopian tube. Tiny hairs line the inside of the fallopian tubes and help move the egg along to the uterus. The inside of the tube can easily be damaged or blocked by infection.

The uterus

The **uterus** is about the size and shape of an upside down pear. It's hollow, very stretchy and made of muscle. This is where the baby develops during pregnancy. The uterus can stretch to hold a baby and shrink back to its pre-pregnancy size after the baby is born.

The cervix

The lower part of the uterus which connects to the vagina is called the **cervix** or neck of the uterus. After sperm is released during sex, it swims through the vagina and cervix to reach an egg.



The cervix contains small glands which produce secretions called **mucus**. Mucus alters in appearance, texture and amount during the menstrual cycle.

During most of the cycle it's thick, sticky, and creamy in colour. Around the time of ovulation (the fertile phase) it becomes clearer (transparent), wetter and more stretchy, like raw egg white.

These changes allow sperm to pass through the cervix and reach the egg more easily. When someone is pregnant, their cervix becomes plugged with very thick mucus to protect the developing baby from infection.

Vagina

The **vagina** is a muscular tube which leads from the cervix to the vaginal opening (vulva). The vaginal opening is between the legs, between the **urethra** at the front and the anus at the back.

The vagina tilts upward and towards the small of the back. It has glands which produce lubricating secretions during sexual arousal that help make penetrative sex more comfortable.

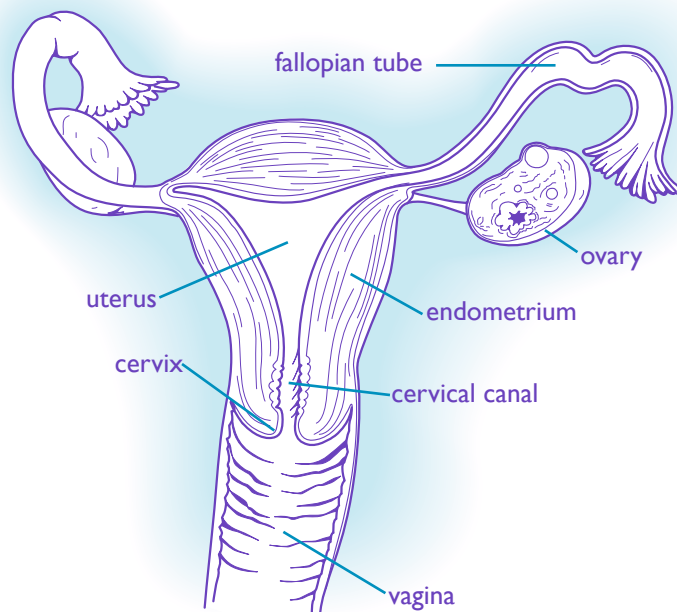
The vaginal walls are stretchy, allowing it to hold a tampon and stretch during sex or when giving birth.

The menstrual cycle

The menstrual cycle is the process during which an egg develops and is released from the ovaries, and the **endometrium** (lining of the uterus) prepares for a possible pregnancy. If you don't get pregnant, the lining of the uterus is shed as your period. The menstrual cycle is controlled by hormones.

How long does the cycle take?

- The number of days in the menstrual cycle is calculated from the first day of the period to the day before the start of the next period.



- The average length of the menstrual cycle is around 28 days, although many people have longer or shorter cycles and this is normal.

What happens during the menstrual cycle?

- The first day of the period is day one of the cycle. During your period about 20 eggs start to develop in the ovary.
- The hormone estrogen causes the endometrium (uterus lining) to thicken in preparation for a fertilised egg. The mucus in the cervix becomes thinner, wetter and more stretchy, allowing sperm to reach an egg more easily.
- Regardless of how long or short your cycle is, **ovulation** (egg release from an ovary) usually

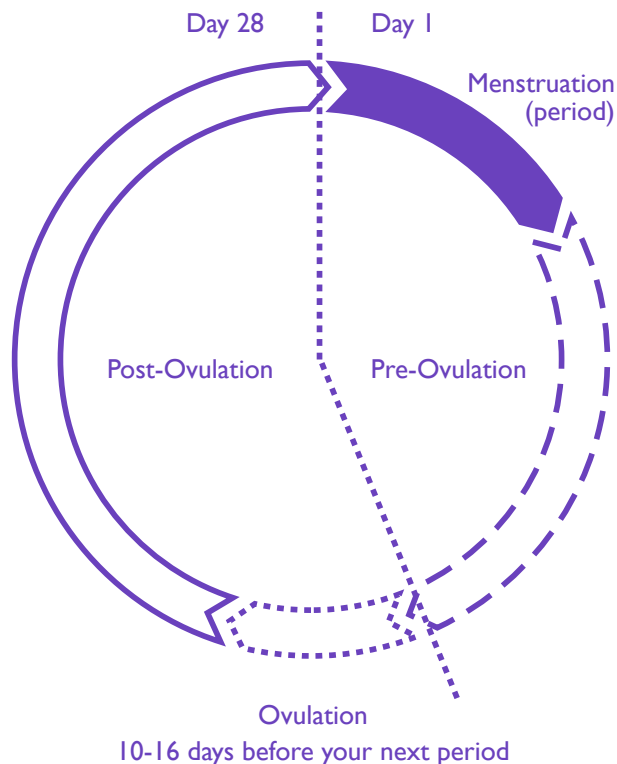
happens around 10–16 days before the start of your next period. However, the time from the first day of the period to ovulation can vary.

- Occasionally, more than one egg is released during ovulation (this happens within 24 hours of the first egg being released). If more than one egg is fertilised it can lead to a multiple pregnancy such as twins. If one egg divides into two during development it can also lead to twins.
- Ovulation triggers the production of the hormone progesterone. This prepares the endometrium even further, ensuring it's spongy, thick and full of nutrients so a fertilised egg can implant into it. Nutrients help to feed the fertilised egg so it can grow.
- After ovulation, the cervical mucus goes back to being thick and sticky. If the egg isn't fertilised by a sperm, it'll be reabsorbed naturally by the body, the level of hormones falls, and this menstrual cycle comes to an end.
- The cycle then begins again. The endometrium breaks down and is shed through the vagina as a period, also called **menstruation**.

The menopause

At around 50 years old your ovaries stop producing eggs. Your periods stop and you're no longer fertile. This is called the menopause.

The time leading up to the menopause is called the pre-menopause, and it's during this time that the hormonal and biological changes associated with the menopause begin. Your periods could become more or less frequent, or shorter, before stopping altogether.



Periods – *did you know?*

- Menstrual cycles can last between 21 days and 40 days.
- Some menstrual cycles can vary in length from month to month.
- The average amount of menstrual blood lost in a period is 3-5 tablespoons.
- A period usually lasts 2-8 days.
- Some people have pain around the time of ovulation. This is known as **Mittelschmerz** which means 'middle pain'.

Male bodies

Male reproductive organs are found entirely outside the body.

The male reproductive organs

Penis

The penis has two main parts, the head and the shaft. Urine and semen come out of it. The head is surrounded by a sleeve of skin called the foreskin. Sometimes the foreskin is removed by surgery – this is called circumcision.

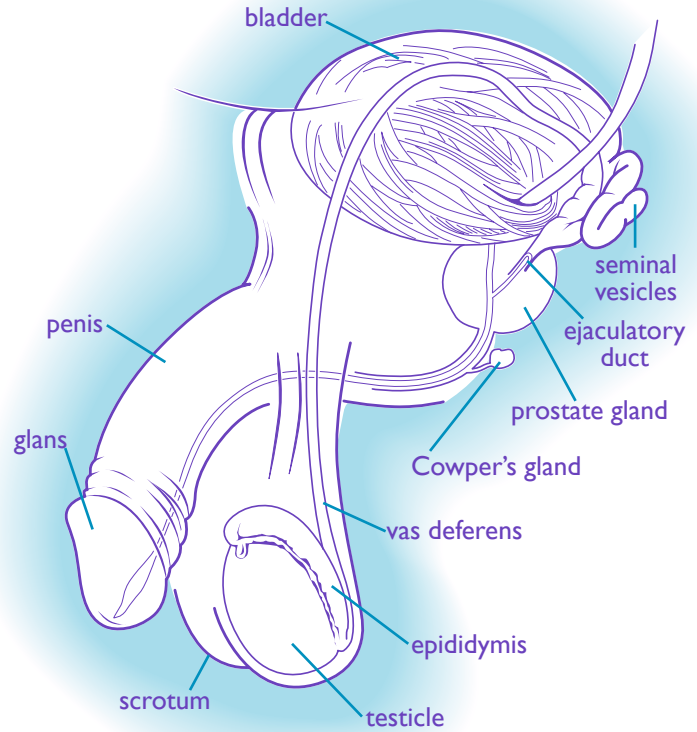
Usually the penis is soft and hangs down over the scrotum but it can become erect (hard). When someone with a penis is sexually excited (and at other times too) the penis fills with blood and becomes stiff, grows longer and wider and sticks outwards and upwards from the body. This is known as an **erection**. The foreskin also stretches to leave the head of the penis completely exposed.

The shape of an erect penis varies although it usually curves upwards slightly, and may point to one side. Penis size also varies but not by very much.

Testicles and scrotum

Inside the **testicles**, sperm are made and male hormones produced. Male bodies have two testicles, roughly the size of two small plums, and they're protected in a soft pouch of skin called the **scrotum**.

The scrotum hangs outside the body just behind the **penis** and between the legs. Its position helps to keep the testicles cool – the average body temperature (37°C) is too hot to produce healthy sperm. The testicles are very sensitive to heat – if they get too hot, the scrotum drops down to cool



off and when they're cold it shrinks closer to the body to keep warm.

Male hormones

The testicles produce the male hormone **testosterone** which causes sperm production and growth. It's also important for male sex drive, and controls male characteristics such as hair growth and the deepening of the voice.

Sperm – did you know?

- Boys start to produce sperm at puberty, the time when their body goes through changes from a boy to a man.
- It takes about 80 days for a sperm to be produced, but as production is a continuous process there's always plenty of fully mature sperm at any one time.
- The testicles produce around 100 million sperm every day.
- Some sperm will enter the cervix within minutes of sex and move through the uterus in 2–7 hours.
- Sperm can live for up to 5-7 days in a female body if the conditions are right.

Sperm

There are many tightly coiled tubes in each testicle. **Sperm** are continuously made in these tubes. The sperm travel along the tiny tubes to a larger coiled tube called the **epididymis** which is at the top of the testicle. They stay here until they're fully mature and ready to be ejaculated.

Sperm are made up of three main parts:

- the head, containing the chromosomes (see page 17)
- the middle, containing the energy supply
- the tail, which helps the sperm to move quickly to reach an egg.

Ejaculation

At **ejaculation**, sperm passes along the vas deferens (sperm ducts) to the penis and out of the body through the urethra. On the way, fluid from the

seminal vesicles and **prostate gland** is added to the sperm. This helps nourish and transport them and gives **semen** (as it's now called) its white, creamy appearance. The average ejaculation contains 2–4ml of semen (about a teaspoon) and each ml contains around 100 million sperm.

To prepare for ejaculation, a small amount of lubricating fluid, known as **pre-ejaculation fluid** is produced from the **Cowper's glands**. This fluid leaks out of the penis before ejaculation and may contain sperm. When you ejaculate, the muscles of the penis contract forcing the semen out of the penis in spurts. Straight after ejaculation the semen is thick but it becomes more liquid after a few minutes – this helps to release the sperm.

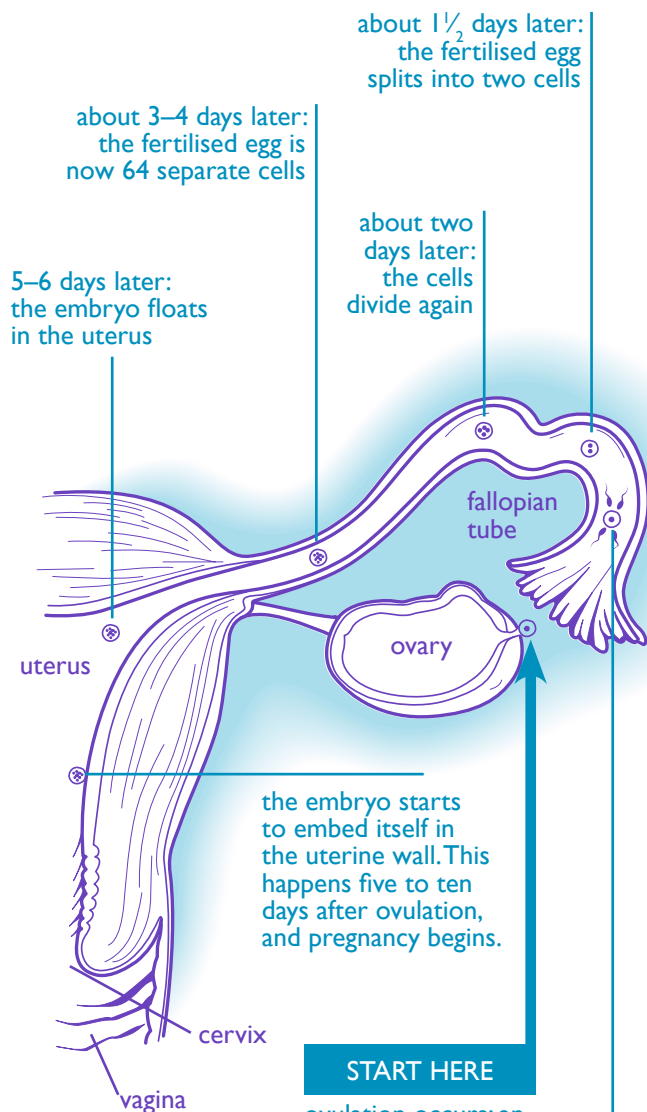
Conception (getting pregnant)

Conception begins with fertilisation and ends with implantation – getting pregnant. For fertilisation to take place, an egg needs to meet a sperm – for example, by a man and woman having sex.

- Sperm are able to wait in the cervix, uterus and fallopian tube until ovulation. The ovary releases an egg as part of the menstrual cycle and it's picked up by the fallopian tube. There it can be fertilised by the sperm.
- Small beating hairs and tiny wave-like contractions help the egg travel along the fallopian tube where it may meet a sperm within minutes or hours of ovulation. The egg only lives for up to 24 hours so the chance of pregnancy increases if the sperm are ready and waiting. If you have sex 2–3 times a week you'll help ensure there is always sperm waiting.

- The sperm attaches itself to the egg and produces a special substance that dissolves the outer coat of the egg. Only one sperm will be able to enter the egg. Once it has entered, the egg coating is repaired to prevent other sperm from getting in.
- Once the sperm is fully inside the egg, fertilisation has taken place.
- The fertilised egg is wafted down the fallopian tube to the ready-prepared uterus. It settles here and over a few days attaches itself to the thick, nutritious lining. Implantation has now taken place, conception is complete and the pregnancy begins. The time from ovulation to implantation is around 5–10 days.
- Once the pregnancy has begun, the pregnancy hormone **human chorionic gonadotrophin** (hCG) is produced.

Sometimes a pregnancy develops outside the uterus, usually in the fallopian tube. This is called an **ectopic pregnancy**.



Conception – did you know!

- Conception is a process that starts with fertilisation and ends with implantation.
- It takes about 15 minutes for the sperm to cross the outer membrane and enter the egg.
- The egg has special places on its outside coat that attract the sperm.
- Out of 100 couples, 80-90 will conceive within a year, if they're having sex frequently (2–3 times per week) during their fertile time.
- An average pregnancy lasts 280 days.

Pregnancy

The pregnancy test

The earliest and most reliable sign of pregnancy for people with a regular menstrual cycle is a missed period. Sometimes the period may be shorter or lighter than normal.

You can carry out a pregnancy test from the first day of a missed period. Tests carried out earlier than this aren't always accurate. If you don't have regular periods, the earliest time to do a test is 21 days from the last time you had unprotected sex. For some people the test doesn't show positive until their period is at least a week late.

Pregnancy tests look for the pregnancy hormone hCG which is found in the urine of pregnant people. A positive test is almost always correct. But there can sometimes be a negative result if the test is carried out too early or not correctly, even though you may be pregnant.

It's all in the genes

How a baby looks is determined by the genes it gets from its parents. Genes are contained in **chromosomes** – tiny thread-like structures – and each chromosome contains thousands of genes. It's these genes that determine height, build, blood group, and eye and hair colour. Some characteristics will be inherited from the mother and some from the father.

So how is the sex of the baby decided?

An egg has 22 chromosomes and one sex chromosome known as the X chromosome. A sperm also has 22 chromosomes and one sex chromosome which can either be an X or a Y chromosome. The sperm's chromosome determines the sex of the baby. A simple way to look at it is like this:

- If the egg is fertilised by a sperm containing an X chromosome the baby will be female.
Mother X + Father X = XX = Female
- If the sperm contains a Y chromosome the baby will be male.
Mother X + Father Y = XY = Male.

There's no reliable scientific evidence to support claims made for influencing the sex of the baby, such as when you have sex, sexual positions or what you eat.

Contraception and sexual health

Contraception can help you avoid getting pregnant. Understanding how your body works can help you and a partner plan a pregnancy or avoid one. Different methods of contraception suit people at different times of their lives. They work in different ways:

- preventing or affecting ovulation
- stopping fertilisation by preventing sperm from meeting an egg
- identifying the fertile and infertile times of the menstrual cycle.

For more information visit www.fpa.org.uk or www.sexwise.org.uk

Where can I get more information and advice?

The National Sexual Health Helpline provides confidential advice and information on all aspects of sexual health. The number is **0300 123 7123**. It's open Monday to Friday from 9am-8pm.

For more information on sexual health visit www.fpa.org.uk or www.sexwise.fpa.org.uk

Information for young people can be found at www.brook.org.uk

Clinics

To find your closest clinic you can:

- use Find a Clinic at www.fpa.org.uk/clinics
- download FPA's Find a Clinic app for iPhone or Android.

Details of general practices and pharmacies in England are at www.nhs.uk and in Wales at

www.nhsdirect.wales.nhs.uk. In Scotland, details of general practices are at www.nhsinform.scot and in Northern Ireland are at www.hscni.net

Emergency contraception

If you've had sex without contraception, or think your method might've failed, there are different types of emergency contraception you can use.

- An IUD is the most effective option. It can be fitted up to five days after sex, or up to five days after the earliest time you could've ovulated (released an egg).
- An emergency contraceptive pill with the active ingredient ulipristal acetate can be taken up to five days (120 hours) after sex. It's available with a prescription or to buy from a pharmacy. ellaOne is the only brand in the UK.
- An emergency contraceptive pill with the hormone levonorgestrel can be taken up to three days (72 hours) after sex. It's available with a prescription or to buy from a pharmacy. There are different brands.

Try and get emergency contraception as soon as possible after unprotected sex.

Emergency pills are available for free from some pharmacies. Age restrictions may apply.

Sexually transmitted infections

Most methods of contraception don't protect you from sexually transmitted infections.

Male (external) and female (internal) condoms, when used correctly and consistently, can help protect against sexually transmitted infections. If you can, avoid using spermicidally lubricated condoms. The spermicide commonly contains a chemical called Nonoxinol 9, which may increase the risk of HIV infection.

A final word

This booklet can only give you general information about reproduction.

The information is based on Heffner, L J and Schust D J, *The Reproductive System at a Glance* (4th edn, Oxford: Wiley-Blackwell, 2014) and J Knight, *The Complete Guide to Fertility Awareness* (Routledge, 2016).

Contact your doctor, practice nurse or a sexual health clinic if you're worried or unsure about anything.



the sexual health charity



sexwise.org.uk

www.fpa.org.uk

This booklet is produced by the sexual health charity FPA, registered charity number 250187. Limited liability company registered in England, number 887632. Supported by the Department of Health. FPA does not run the National Sexual Health Helpline.

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ISBN 978-1-912202-11-9

The information in this booklet was accurate at the time of going to print. Booklets are reviewed regularly. Next planned review March 2021.

If you'd like information on the evidence used to produce this booklet or would like to give feedback email feedback@fpa.org.uk

