

Pubertal Induction in Girls with Ovarian Insufficiency

This leaflet explains more about oestrogen therapy in girls. If you have any further questions or concerns, please speak to the staff member in charge of your care.

What is puberty?

Puberty is a long process that starts when children's bodies begin to show small changes that transform it into a grown up shape step by step. Girls develop breasts first and start their periods later. These changes normally begin between the ages of 9 and 13 years. The changes occur when the body starts producing chemical messengers (hormones) which travel around the body giving instructions for how it should work.

Females have two small oval-shaped organs inside their abdomen called ovaries which produce follicles and female sexual hormone called oestrogen in response to other hormones called follicle stimulating hormone (FSH) and luteinising hormone (LH), which are made in a part of the brain called the pituitary gland.

When puberty starts LH and FSH will be produced and ovaries will start making oestrogen. As a girl gets more mature, the amount of oestrogen produced by her ovaries increases and makes her breasts and womb grow and develop a mature female body. When periods start the follicles in the ovary will develop into eggs.

Each month an egg is released by one of the ovaries and travels into the womb where it can be ready to be fertilised by sperm. At the same time the lining of the womb becomes thicker. If the egg is fertilised, it will attach itself to the wall of the womb and develop into a baby. If the egg is not fertilised, the thicker lining of the womb is not needed so it leaves the body as a monthly bleed or "period".

What does "hypogonadism" mean?

Hypogonadism occurs when ovaries are not able to mature enough follicles and release sufficient oestrogen and it can be due to two reasons:

- Primary ovarian insufficiency: when there is direct damage to ovaries caused by chemotherapy or radiation treatment, surgical removal of both ovaries, genetic or unknown causes.
- Central hypogonadism: when the pituitary gland is damaged by brain radiotherapy, tumour or surgery or it did not develop properly and there is no production of LH and FSH to stimulate the ovaries.

In both cases, the ovaries will not produce normal levels of oestrogen and eggs. Among cancer survivor girls, the risk of hypogonadism varies according to the type of cancer and related treatment, age at treatment and family history.

In some girls puberty or even periods can start naturally but the process stops after few months or years. In these circumstances oestrogen treatment is needed to progress and sustain puberty.

Why is pubertal induction important?

Giving oestrogen helps breasts and the womb to grow and develop and also enables a girl to grow at a faster rate in height. Oestrogen is important for the health of the whole body, helping to keep the heart and blood vessels healthy and to maintain strong bones.

What is the best age to induce puberty?

At the hospital the hormone doctor will check growth and development and measure hormones through a blood test. Pubertal induction, if required, is usually started at around 12 years of age. Oestrogen is started in very low doses which are increased gradually, meaning that periods will not start for at least three years. Although this may seem a long time to wait, it is important for puberty to progress slowly to ensure good breast and womb development and normal height growth. In most girls it will take a few months after starting oestrogen treatment before any changes in breast development are seen.

Axillary and pubic hair may still occur in girls with ovarian insufficiency. This is because the hormones which induce axillary pubic hair growth are the androgens produced by the adrenal glands.

How is oestrogen given?

Oestrogen may be given via a skin patch (a bit like a sticky plaster), so that the oestrogen is absorbed through the skin. The skin patches need to be cut to size when starting treatment, usually beginning with 1/8 patch applied overnight, increasing slowly until a full adult dose is reached after several years. The patch may be applied anywhere below the waist, most girls put it on their lower abdomen. It usually sticks well but can be replaced if it falls off or it can be covered with a small piece of a soft adhesive tape. Oestrogen can also be given as a tablet. Oestrogen tablets also start with a very low dose which is increased gradually, usually every six months, until an adult dose is reached. The hormone doctor will discuss both patches or tablets options and advise on which one might be more appropriate.

Will I have periods like my friends?

When the oestrogen dose is high enough, the womb will grow and its lining will thicken. The lining will eventually shed and cause a period. When the womb is well developed, i.e. has achieved an adult size and shape, it is advisable to let the lining of the womb shed regularly as period, to prevent lining overgrowth. This means that another hormone known as progesterone needs to be added to oestrogen. Progesterone is normally produced for part of each menstrual cycle in women and helps to regulate periods. Progesterone is usually given together with

oestrogen as a combined patch or combined tablet, which is easy to use and gives regular periods.

Do periods hurt?

Periods can sometimes be painful, especially on the first day of bleeding. Painful periods may happen to any woman. The pain may be eased by medicines such as paracetamol or ibuprofen which can be bought from a supermarket or pharmacy. Exercise, a warm bath or hot water bottle held over the abdomen may also help.

Heavy and/or uncomfortable periods will usually improve with time on regular treatment. If periods remain too painful or too heavy the GP or the hormone doctor will be able to help.

What happens after pubertal induction?

When pubertal development is completed, it is important to continue to take oestrogen and progesterone as an adult woman until the time for menopause approaches later on in adult life. Menopause is when a woman stops having periods usually around the age of 54.

There are many different hormonal replacement therapies (HRTs) available and the different options can be discussed with the hormone doctor, nurse specialist or GP. If one product is not suitable, it is easy to change to a different one. If in a sexual relationship and on treatment with HRT, protection against a possible unwanted pregnancy should be considered. In rare circumstances it is possible for the ovaries to release an egg, especially if puberty or periods occurred prior to oestrogen therapy being started

It is important to take the chosen oestrogen product as instructed. If oestrogen treatment is stopped before the planned "menopause", it could have serious effects on heart, bones and womb and the success of any future assisted reproductive fertility treatment that might be planned.

Contact us

Please contact the paediatric endocrine clinical nurse specialist on either 0787 659 7062 or 0778 685 6764 (Monday to Friday 8.30am to 4.30pm) if you have any questions about this.

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit www.stgeorges.nhs.uk

Additional services

Patient Advice and Liaison Service (PALS)

PALS can offer you on-the-spot advice and information when you have comments or concerns about our services or the care you have received. You can visit the PALS office between 9.30am and 4.30pm, Monday to Friday in the main corridor between Grosvenor and Lanesborough wings (near the lift foyer).

Tel: 020 8725 2453 **Email:** pals@stgeorges.nhs.uk

NHS Choices

NHS Choices provides online information and guidance on all aspects of health and healthcare, to help you make decisions about your health.

Web: www.nhs.uk

NHS 111

You can call 111 when you need medical help fast but it's not a 999 emergency. NHS 111 is available 24 hours a day, 365 days a year. Calls are free from landlines and mobile phones.

Tel: 111

AccessAble

You can download accessibility guides for all of our services by searching 'St George's Hospital' on the AccessAble website (www.accessable.co.uk). The guides are designed to ensure everyone – including those with accessibility needs – can access our hospital and community sites with confidence.



Reference: DIB_PIG_01 **Published:** May 2021 **Review date:** May 2023