

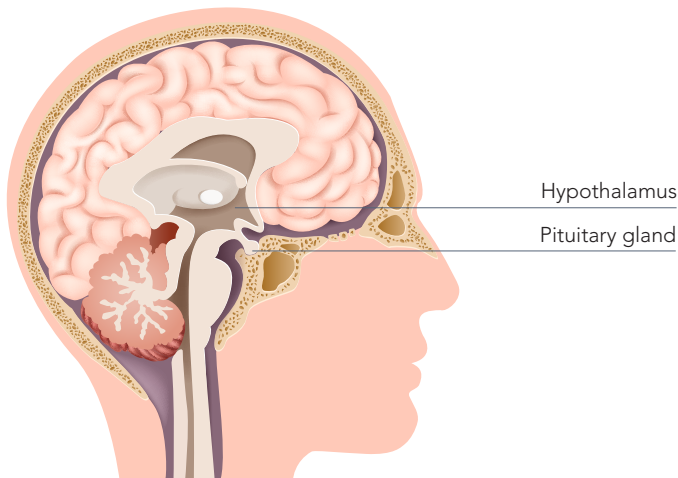
Pituitary gland

Health information after cancer treatment as a child or teenager

The purpose of this factsheet is to tell you about long-term side effects (called 'late effects') that can happen after having cancer treatment. They can happen soon after treatment has finished or later in life. The medical team at the hospital where you received your treatment or are attending follow-up checks will be able to help you with specific information about which late effects are relevant to you.

What is the pituitary gland?

There are two glands in your head which produce hormones, called the hypothalamus and the pituitary. Hormones are natural chemical messengers which travel in your bloodstream to control important body functions and tell other glands what to do.



depending on the dose of radiotherapy. The higher the dose of radiotherapy, the sooner the pituitary effects can be seen, even within one or two years after treatment. However, as the effect can also occur much later it is important that you attend follow-up appointments and have routine checks of your hormones.

Hormones are vital for growing and developing from a child into an adult, for your energy levels and for your general wellbeing. Hormones are important throughout your life regardless of your age. The pituitary gland is responsible for five hormones. You may be deficient in only one pituitary hormone (growth hormone deficiency is the most common) or you may need replacement for all five.

If your hypothalamus is damaged, this can also affect other important body functions such as your sleep/awake rhythms, thirst, hunger, and body temperature.

What hormones does the pituitary gland produce?

There are two areas of the pituitary that produce hormones.

Anterior (front) part:

- **growth hormone (GH)** controls how tall you grow and the size of your muscles. This is the most common hormone to be affected.
- **reproductive hormones (LH) and (FSH)** are responsible for puberty, keeping bones strong and enabling you to have a baby. They signal the ovaries in girls to make oestrogen and eggs, and the testicles in boys to make testosterone and sperm.

The hypothalamus sends messages to the pituitary gland via special 'releasing' hormones. The pituitary gland then sends hormones to other parts of the body. When the pituitary (or the hypothalamus) is damaged and it can't produce hormones, we call this 'hypopituitarism'. When your pituitary hormone is not produced, we call this a 'hormone deficiency'.

If cancer affects your hypothalamus or pituitary hormone, problems may happen before any treatment starts and may be made worse if you need to have surgery to remove the cancer. Other treatments, such as radiotherapy to the brain, can affect the hypothalamus or pituitary, causing damage which happens over time,

Continued →

- **thyroid stimulating hormone (TSH)** is required to maintain your metabolism (whether your body works slowly or quickly, for example, how cold or warm you feel). It signals your thyroid gland to make thyroid hormones.
- **adreno-corticotrophin hormone (ACTH)** helps your body to respond to stress and illness by signalling the adrenal gland to make cortisol hormone.

Posterior (back) part:

- **antidiuretic hormone (ADH)** controls how much urine you pass and how much fluid you need to drink for your body to be healthy.

Who is at risk of hypopituitarism?

You may be at risk if you have had:

- cancer of the brain, hypothalamus or pituitary gland
- surgery to the brain, hypothalamus or pituitary gland
- radiotherapy to the head/brain, eye/eye socket, nose or face
- total body irradiation for bone marrow or stem cell transplant

How is hypopituitarism screened for?

Pituitary problems are usually monitored by doctors specialising in hormones called endocrinologists.

Pituitary hormone problems may have been present soon after your diagnosis or surgery, or may be identified during your follow-up in clinic. Your doctors and nurses will ask you how you are and if you have any problems with your energy levels. During your follow-up you will be monitored to see how you are growing and progressing through puberty.

Your doctor will arrange routine blood tests to check hormone levels but sometimes a specific test is also required to see if normal levels of hormones can be stimulated. This usually involves an injection followed by blood tests over several hours.

How is hypopituitarism treated?

All of the hormones listed above can be replaced if needed as they are all available as synthetic hormones (artificial copies of natural hormones that are not extracted from animals or humans).

Cortisol (natural steroid)

This is probably the most important hormone as it is essential for health and dealing with illness. It is replaced with tablets or liquid called hydrocortisone, usually two or three times a day, with a plan to increase them if you are ill.

This hormone is vital for your health and it is absolutely essential that you take it if you have been told you need it. You should never stop taking these tablets. Your team will explain to you (and your parents) how the hydrocortisone doses need to be increased if you are unwell. If you have any treatment in hospital or an operation, you must let the doctors looking after you know that you are taking hydrocortisone, as you may need extra doses for a short time. You may also be taught how to give yourself an injection of hydrocortisone in case you are vomiting (being sick) or have diarrhoea. It is also recommended to have a MedicAlert bracelet and carry some information with you about your medical condition (see CCLG late effects factsheet - adrenal insufficiency).

Growth hormone

This is given as a once-daily injection under the skin with a pen-like device, similar to those used for diabetes. Growth hormone treatment is usually continued until you complete all of your growth. If you have growth hormone deficiency as an older teenager or an adult, restarting injections will be discussed with you, as growth hormone can help with energy levels, body composition (fat and muscle balance), and developing strong bones.

Sex steroids (oestrogen and testosterone)

These are started if puberty does not happen on its own (see CCLG late effects factsheets - puberty) or if levels are low as an adult. Testosterone (gels or injections) for males, or oestrogen (patches, gels, or tablets) for females, will be started. These will need to be continued when you are an adult to maintain adult body appearances, for sexual function, and to help keep your bones healthy. In the future, if you wish to start a family then you may require further hormone injections.

Thyroid hormone

Thyroid hormone replacement is given as a small tablet taken once a day called levothyroxine. You will have your thyroid hormone levels monitored by blood tests usually every six to 12 months.

Continued ➔

