

# Lutetium therapy

This leaflet aims to answer your questions about having lutetium therapy. It explains the benefits, risks and alternatives, as well as what you can expect when you come to hospital. If you have any further questions, please speak to a doctor or nurse caring for you.

## What is lutetium therapy?

Lutetium therapy (lutetium-177-DOTA-octreotate) is a type of therapy known as a targeted radionuclide therapy or peptide receptor radionuclide therapy (PRRT).

It uses a drug consisting of:

- octreotate – a man-made (synthetic) form of the naturally occurring hormone somatostatin
- lutetium-177 – a substance that emits radiation.

This combined drug is given as an infusion into a vein. It then attaches itself to the surface of many neuroendocrine tumours, emitting radiation into the tumour.

Neuroendocrine tumours are group of rare cancers that develop in the neuroendocrine system (a system made up of nerve and gland cells that produces hormones).

The aim of lutetium therapy is to inhibit tumour growth and reduce symptoms associated with the tumour. It is typically given in four cycles, eight to 12 weeks apart.

## Why do I need this treatment?

Your doctors may recommend this treatment if you have a neuroendocrine tumour that is not responding to treatment or is unsuitable for other therapies. To see if you are suitable for lutetium therapy, you will need to have an octreotate scan in our nuclear medicine department to check that the man-made somatostatin attaches well to the tumour cells in your body.

As the number of people with neuroendocrine tumours is relatively low, lutetium therapy does not yet have a licence for use in the UK. However, the therapy has been used across the UK and Europe for over 15 years. Results so far show that in around half of patients completing four cycles of lutetium therapy, the size of the tumour decreased. In over one third of the patients their disease became more stable. However, this does mean that some of patients did not receive any benefit from the therapy.

The leaflet, **Unlicensed medicines – a guide for patients**, has more information about unlicensed medicines. If you would like a copy, please ask your doctor, nurse or pharmacist. Alternatively you can call the pharmacy medicines helpline – contact details are at the end of this leaflet.

## What are the risks?

There are two main types of possible side effects: those relating to the therapy itself and those relating to the radiation dose to your body.

### Side effects related to the therapy

The therapy may:

- Make you feel sick and you may vomit – this normally only occurs on the day of the therapy, and you will be prescribed medication to prevent this.
- Cause increased pain due to inflammation of the tumour, especially if it is in your bones, liver or pancreas. This is usually limited to 72 hours following therapy. A low dose of steroids (dexamethasone) will be prescribed to help reduce this, but you may need to take your usual pain medication more regularly.
- Cause a temporary increase in the intensity of your day-to-day symptoms such as flushing, sweating, palpitations or wheezing and increased frequency of diarrhoea. This is usually limited to 24 hours following the therapy. You may need to increase the amount of anti-diarrhoea medication you are taking.
- Result in minimal hair loss during the therapy – but baldness does not occur and hair re-grows after the therapy finishes.
- Make you feel tired for a few weeks following the therapy. Your clinical nurse specialist will talk to you about how you can manage any tiredness after each cycle of therapy, before you return home.

Alternatively you may feel no different.

### Side effects related to the radiation dose

Lutetium therapy gives off radiation which can affect parts of your body other than the tumour. In particular, it affects your bone marrow and kidneys. Bone marrow produces blood cells, which may become quite low in number. Your kidney function may also decrease. This can mean that you may feel more tired than usual, or be more prone to viral infections for around 10 days, four to six weeks after your therapy. You will have blood tests to monitor these potential side effects. The results of these tests may influence when your next therapy cycle can be given.

Side effects from the radiation can also include damage to healthy cells (although these cells take up much lower amounts of the octreotate than neuroendocrine tumour cells). If you experience increased pain or new pain lasting more than 72 hours after your therapy that is not helped by your pain relief medication, please contact your clinical nurse specialist or cancer doctor.

## Lutetium and pregnancy

As lutetium therapy gives off radiation, it is not given during pregnancy as it can harm the developing baby. All women of child bearing age are asked to provide a sample of urine to rule out pregnancy, before starting each lutetium therapy cycle. Both men and women are advised not to try to conceive during their treatment and for at least six months after treatment. Reliable contraception should be used throughout this period. Your doctor will discuss this further with you.

## Are there any alternative treatments?

There is more than one type of treatment for neuroendocrine tumours. These include:

- **Painkillers** – for pain relief.
- **Somatostatin analogues** – these are man-made forms of the hormone somatostatin, and include the drugs octreotide, lanreotide and pasireotide. They are given by injection for specific symptom relief and to help stabilise your illness.
- **Interferon alpha** – a biological therapy that can help to prevent tumour growth and symptoms. It is given by injection.
- **Surgery** – if the tumour is accessible, surgery can help reduce the tumour size and improve symptoms.
- **Chemotherapy** – this may be used if the tumour is a cell type that responds to chemotherapy. These are drugs used to kill cancer cells, to reduce tumour size and improve symptoms. It is usually given via a drip into a vein in your hand or arm.
- **Biological therapies** (for example, sorafenib or everolimus) – these drugs, which are taken by mouth, reduce growth and cell division of the tumour.
- **Radio- or chemo-embolisation** – a technique that reduces the blood flow to the tumour, while also delivering chemotherapy or radiation therapy, in order to prevent growth of tumour cells.
- **Radiofrequency ablation** – a procedure carried out under general anaesthetic, which uses a low electrical current to deliver heat to remove liver tumours.
- **Targeted radionuclide therapies** – these are types of radiation therapy, and include <sup>131</sup>I-MIBG targeted radionuclide therapy, yttrium-90-DOTA-octreotide and octreotate

These treatments may be given one after another, or together.

After discussing all your treatment options, you may decide you prefer not to have any treatment, or your team may feel that these sorts of treatments will not help you. In this case, they can refer you for palliative care near your home. This supports you and helps to ease your symptoms, but it will not cure you. You can also have palliative care in combination with some of the treatments listed above.

## Asking for your consent

We want to involve you in decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the treatment and you understand what it involves.

If you would like more information about our consent process, please speak to a member of staff caring for you.

## How do I prepare for the procedure?

Each lutetium therapy cycle typically involves three days of hospital appointments, including an overnight stay. Four cycles take eight to 10 months in total. Your follow-up appointments after completing your last therapy cycle take place over a further 12 months.

Before each cycle of treatment, you will be asked to provide blood samples and undergo a physical examination. These, together with the completion of a short questionnaire on your general health, will help us to assess your suitability for treatment.

We need to know about any medicines you are taking or have been given, even if it is one you have bought yourself. If you are also being treated with octreotide (Sandostatin LAR<sup>®</sup>) or lanreotide injections, we need to know the date of your last injection. This is because we want to plan each cycle of lutetium therapy to happen in the days just before your injection is due. If you are taking octreotide injections twice a day you may be asked to omit the doses 12 hours before and 12 hours after the therapy. You will be able to eat and drink and take all other medication as normal on the day of your therapy.

You should prepare to stay in hospital overnight after the therapy. This is so that you do not pass radiation on to others. Don't bring large amounts of money or valuables into hospital, but you will need an overnight bag with nightwear and toiletries. More details of how to prepare are described in our leaflet: **Preparing for your stay at Guy's**.

The time visitors can spend with you will be restricted. We will talk to you about this before you start your therapy. Children under 16 years and pregnant women must not come with you or visit as they are particularly prone to the effects of radiation.

## What happens during the procedure?

Your therapy will be given in the nuclear medicine department at Guy's Hospital. The whole procedure takes around five hours to complete

A cannula (a small plastic tube) is placed into a vein in your arm. First, we will give you medication through the cannula to stop you feeling sick or vomiting. Then an infusion of amino acids will be attached to the cannula. This helps to protect your kidneys from the radioactivity.

After the amino acid infusion has been running for one hour, it will be stopped to allow the administration of lutetium-177 DOTA-octreotate to start. The lutetium infusion takes 30 minutes. After it has finished, the infusion of amino acids will be restarted to run for another three hours until complete. The cannula is then removed.

A member of the nuclear medicine physics team will monitor the level of radiation from your body at intervals following your treatment.

## What happens after the procedure?

After your treatment, you will be admitted to Sarah Ward where you will stay overnight. More information about Sarah Ward is in our leaflet: **Welcome to the Nuclear Medicine Unit on Sarah Ward**.

The following morning, you will return to the nuclear medicine department for post therapy scans. These scans are similar to those that you had prior to treatment to check that lutetium therapy is suitable for you, and may take up to two hours. They help us to measure the progress of your treatment, along with blood tests.

After the scan you should be able to go home provided that the amount of radioactivity remaining in your body is low enough. A member of the nuclear medicine physics team will measure your radiation levels and advise you on the precautions you need to follow when you leave hospital. These precautions are necessary to reduce the radiation dose to other people whom you come into contact with.

If your radiation levels are high on the day after the therapy, you will be asked to stay on Sarah Ward for another night. However, this is very unlikely.

### After leaving hospital

You should follow the radiation precautions given to you and make sure you keep these somewhere safe, in case you need to refer to them.

You will be asked to have a blood test every two weeks, for eight to 10 weeks, to check what effect the therapy has had on your blood cells, kidneys and liver. These will be arranged with your GP. Your clinical nurse specialist will contact you regularly after we have received the blood test results from your GP, to answer your questions and provide you with help and support.

### Returning to work

Generally, patients that have no symptoms prior to the procedure recover more quickly. The type of work you do should be taken into consideration when deciding when to go back to work. Your consultant and clinical nurse specialist will discuss this with you.

**For at least six weeks after therapy you should tell any nurse, doctor or pharmacist that you visit, that you have been treated with lutetium-177-DOTA-octreotate therapy.**

### Appointments at King's

We have teamed up with King's College Hospital in a partnership known as King's Health Partners Academic Health Sciences Centre. We are working together to give our patients the best possible care, so you might find we invite you for appointments at King's. To make sure everyone you meet always has the most up-to-date information about your health, we may share information about you between the hospitals.

## Contact us

If you have any questions or concerns about your lutetium therapy treatment, please contact us:

- Clinical nurse specialist – 020 7188 6304 / 07917 087 528
- Nuclear medicine physicists – 020 7188 3802
- Nuclear medicine department – 020 7188 4112

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit [www.guysandstthomas.nhs.uk/leaflets](http://www.guysandstthomas.nhs.uk/leaflets)

## Neuroendocrine Tumour Patient Foundation

**w:** [www.netpatientfoundation.com](http://www.netpatientfoundation.com)

## Macmillan Cancer Support

**w:** [www.macmillan.org.uk](http://www.macmillan.org.uk) **t:** 0808 808 0000 (free telephone helpline)

## Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.

**t:** 020 7188 8748 9am to 5pm, Monday to Friday

## Patient Advice and Liaison Service (PALS)

To make comments or raise concerns about the Trust's services, please contact PALS. Ask a member of staff to direct you to the PALS office or:

**e:** 020 7188 8801 at St Thomas' **t:** 020 7188 8803 at Guy's **e:** [pals@gstt.nhs.uk](mailto:pals@gstt.nhs.uk)

## Language Support Services

If you need an interpreter or information about your care in a different language or format, please get in touch using the following contact details.

**t:** 020 7188 8815 **fax:** 020 7188 5953

## NHS 111

Offers medical help and advice from fully trained advisers supported by experienced nurses and paramedics. Available over the phone 24 hours a day.

**t:** 111

## NHS Choices

Provides online information and guidance on all aspects of health and healthcare, to help you make choices about your health.

**w:** [www.nhs.uk](http://www.nhs.uk)

**Leaflet number: 4026/VER1**

Date published: March 2015

Review date: March 2018

© 2015 Guy's and St Thomas' NHS Foundation Trust