



177-Lutetium Therapy for Neuroendocrine Tumours (NETs)

177-Lutetium Therapy

This leaflet aims to answer your questions about having radioactive 177-Lutetium therapy. It explains the benefits and risks to the treatment, as well as what you can expect when you come to hospital.

If you have any further questions or concerns, please contact the Neuroendocrine Tumours (NETS) Clinical Nurse Specialists or the Nuclear Medicine team.

What is 177-Lutetium Therapy?

177-Lutetium Therapy is a type of treatment known as a targeted radionuclide therapy or peptide receptor radionuclide therapy (PRRT). It is a drug that contains:

- Octreotate – a man-made (synthetic) form of the naturally occurring hormone somatostatin which is bound to
- Lutetium¹⁷⁷ – a substance that emits radiation

Octreotate, the synthetic form of somatostatin attaches to receptors on the surface of neuroendocrine tumours. When Octreotate is given with the 177-Lutetium it attaches to the receptors on the tumour surface and delivers radiation directly to the tumour cells; this is known as targeted radionuclide therapy.

The aims of 177-Lutetium therapy are to slow down or prevent tumour growth and to reduce some of the symptoms caused by the tumour.

177-Lutetium therapy is usually given as a course of four treatment cycles. Each cycle is given eight to twelve weeks apart.

What are the benefits?

Research shows that 177-Lutetium treatment can increase life expectancy, relieve symptoms and improve quality of life for people who have neuroendocrine tumours. Your doctor may recommend this treatment if you have a neuroendocrine tumour that is getting worse and has stopped responding to other treatment.

To check if you are suitable for 177-Lutetium treatment, you will need to have a DOTATATE PET (Positron Emission Tomography) scan in our PET department, or an Octreotide scan in the Nuclear Medicine department. We will also need to check how well your kidneys are working and may arrange a special kidney test called a glomerular filtration rate (GFR) for you.

What are the risks?

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

The treatment itself may make you more tired, nauseous and/or you may experience vomiting. These latter effects are usually limited to the day of the therapy and we will give you some anti-sickness medicine to take beforehand. You may experience some pain due to inflammation of the

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tumour; this usually passes within 72 hours of receiving treatment. Minimal hair loss is possible during the therapy but baldness does not occur and hair re-grows after therapy is completed.

177-Lutetium therapy can affect parts of your body other than the tumour. In particular, it may affect your bone marrow and kidneys. This can make you feel more tired than usual or make you more prone to infection for a few weeks after treatment. We will arrange for you to have regular blood tests after each cycle of treatment to check your blood count (blood cells) and to see how your kidneys and liver are working. Your Clinical Nurse Specialist will discuss this with you.

The side effects from the radiation may also include damage to healthy cells, and although these cells take up a very low amount of 177-Lutetium compared to the tumour, there is a very small risk that this may damage your bone marrow or cause a secondary blood cancer in the future, several years after you have finished your 177-Lutetium therapy. The benefit of the treatment would have been assessed by a Doctor to outweigh the risk.

Consent – Asking for your consent

We want to involve you in decisions about your care and we will obtain your written consent to any treatment procedures beforehand. The doctor and senior staff will explain all the risks, benefits and alternatives before they ask you to sign a consent form. If you are unsure about any aspect of the treatment proposed, please speak with a member of the NET team.

COVID-19 – How will it impact my treatment?

We will ask you to isolate for a period of time before and after your treatment (the length of time will depend on the current government recommendations) and we may ask you to have at least one COVID-19 swab 3-5 days before your treatment date. We will only proceed with treatment if your COVID-19 swab result comes back as negative and you can comply with the isolation period before and after treatment as required. A member of the Nuclear Medicine therapy booking team can talk to you about this if you would like more information.

When you come into hospital there will be hand gel at the entrances, which we kindly ask you to use, and we will ask you to wear a face mask (or face shield if you cannot wear a mask) in the hospital. At present we do not allow other people to be with you in the department. These guidelines may change as the COVID-19 situation evolves. We will confirm the requirements when we discuss your treatment with you.

All staff will be wearing appropriate protective equipment throughout the department and for the treatment this will include full gown, face shield, masks, gloves and over shoes. This is because of the radioactive nature of your treatment.

Do I need to prepare for the procedure?

Each 177-Lutetium therapy treatment typically involves four separate days of hospital appointments, each eight to twelve weeks apart usually as a day case (see Picture 1 for example of room layout) but may include an overnight stay. It will take eight to ten months to complete all four cycles. During that time, you will also keep in contact with the Nuclear Medicine Therapy team overseeing treatment. Your follow-up appointments after completing your last treatment cycle will take place over the next 12 months.

Before each cycle of treatment, you will be asked to provide blood samples and have an appointment with the NET doctor, or senior member of the NET team. These tests, 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 ones you have bought yourself.

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If you are also being treated with octreotide (Olatuton, Sandostatin LAR® or Lanreotide Autogel) injections you will need to stop them so there is a least 30 days between an injection and treatment cycle. If you are taking daily octreotide injections we will advise you when you should stop these. You will be able to eat and drink and take all other medication as normal on the day of your treatment, unless otherwise instructed by the team during your pre-treatment appointment.

The Nuclear Medicine Therapy Team will provide additional information on what to expect for your treatment days including – some general radiation protection advice and precautions, and specific information relevant to whether you are having your treatment as an inpatient or as a day-case.



Picture 1. The day case treatment room in the Nuclear Medicine Department set up for treating either one or two patients.

What happens during the procedure?

Your treatment will be given by the Nuclear Medicine Therapy Team at The Queen Elizabeth Hospital, Birmingham. The whole procedure takes up to six hours to complete, including the post treatment scan on a gamma camera in the Nuclear Medicine Department.

Two cannulas (a small plastic tube) are placed into a vein in each arm. First, we will ask you to take a medicine to stop you feeling sick or vomiting (a supply of Ondansetron tablets will be prescribed to you before starting treatment). Then an infusion (drip) of amino acids will be given through one cannula, this take a total of 4 hours to complete. This helps to protect your kidneys from the radioactivity. We will use the second cannula to give the lutetium infusion, which takes 40 minutes. After the amino acids drip has finished, both cannulas will be removed. A member of the nuclear medicine team will monitor the level of radiation in your body at intervals following your treatment.

What happens after the procedure - do I stay in hospital or go home?

This will depend on whether you are being treated as an inpatient requiring an overnight stay, or as a day-case. This will be discussed with you before treatment and you will be provided with further information specific to the mode of treatment.

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After the first cycle of therapy you will have up to 4 scans of your whole body in the Nuclear Medicine Department. Each of these scans can take about 60 minutes to be performed and are carried out at 4-hours, 1-day, 5-days and 7-days after the therapy. They show the position of the radioactivity in your body, which not only provides a measure of the progress of your treatment but also helps to determine specific radiation restrictions for you for future cycles of treatment. After subsequent cycles you will only have a scan at 4 hours after treatment before you go home.



Picture 2. An example of the gamma camera you may be having your scans taken on – the actual camera may be different from the one shown.

Do I need to be careful with others because I am still radioactive when I leave the hospital?

You will need to take a few precautions when at home in order to keep the amount of radioactivity you might pass on to others to a minimum. The Nuclear Medicine Therapy staff will advise you. As a general rule these precautions relate to avoiding close contact with children, other members of your household, pregnant women, resuming normal social activities and returning to work. The actual precautions you will need to take and the length of time that these need to be observed will be calculated and discussed in detail with you when you are ready for discharge.

The following are times for guidance: you may have to avoid close contact with children for up to a month (e.g. if you have children at home or you normally work closely with children throughout the week); avoid close contact with adults at home and sleep apart for up to 3 weeks; if your partner is pregnant avoid close contact and sleep apart for about a month. More typically these times can be somewhat less. The length of time that you need to stay off work will depend on how much time you spend with other people and the distance. For example if you work full-time at one metre with the same person every day you may have to stay off work for about 2 weeks after each cycle of treatment. However if you worked more than 2 metres from the next person then you could probably go back after a few days. The actual restriction times will be calculated when you leave hospital after your treatment. Your radioactivity will be measured again if you come back to the hospital and the restriction times can often be reduced if the radioactivity has dropped more quickly than was expected.

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This advice should keep the extra radiation dose to any children or pregnant women, people you meet at work and adults other than your partner below 1mSv (millisievert) which is less than half the annual average background radiation dose. As a “comforter and carer” your partner may receive up to 5mSv if you have 4 cycles of treatment in a year. That would be equivalent to two years natural background.

Some of the radioactivity will be excreted in urine. This is mainly in the first few days but extra care should be taken when using the toilet (including sitting down and flushing twice) and with hand washing for the first week.

There is no need to worry – you can ask questions at any time and you will be given written instructions (with contact telephone number) so you can refer to them at any time.

After discharge from hospital

When you leave hospital, you will be given a laminated card to carry on you for at least six weeks after therapy; you should show this to any healthcare professional including any nurse, doctor or pharmacist that you visit. This card states that you have been treated with radioactive Lutetium 177 therapy and provided contact details should the healthcare person need any information, in particular in relation to taking blood or urine samples for you. The staff will check you have the appointment times for the day 1, 5 and day 7 post-therapy scans if required. You will also be asked to have a blood test every 2 weeks for 8-weeks to check what effect the therapy has had on your blood cells, kidneys and liver function. You will have a clinic appointment a few weeks after each treatment cycle.

177-Lutetium and pregnancy

As 177-Lutetium therapy involves radiation, it is not given during pregnancy as this might harm a developing baby. All patients of child bearing age and potential, are asked to provide a sample of urine to rule out pregnancy before starting each 177-Lutetium therapy cycle. You should not become pregnant or father a child while having treatment and for at least six months after completing treatment.

Who do I contact with queries and concerns?

If you need more information or have any queries, do not hesitate to mention them to your Consultant in clinic (or via Queen Elizabeth Hospital switchboard Tel: 0121 627 2000), or to your NET Clinical Nurse Specialist Tel: 0121 371 7993

You can also obtain more information about the radiation aspects of the therapy by phoning the Nuclear Medicine Unit and asking to speak with the Nuclear Medicine Therapy Team (Tel: 0121 371 2282)

Patient Advice and Liaison Service (PALS)

As a patient, relative or carer, sometimes you may need to turn to someone for on-the-spot help, advice and support. PALS acts independently when handling patient and family concerns, liaising with staff, managers and, where appropriate, relevant organisations to negotiate immediate or prompt solutions.

To contact PALS

- Telephone 0121 371 3280 (office hours 09.00-17.00)
- Email: PALS@uhb.nhs.uk
- Complete the online contact form available on the hospital website

Information for Patients

The Patrick Room

The Patrick Room, at the Cancer Centre at the Queen Elizabeth Hospital, provides information and support to people with cancer and their families in a relaxed and friendly atmosphere. A professional and experienced team, which is supported by trained volunteers, delivers the service.

The Patrick Room is a drop in centre which provides a comprehensive library with leaflets and books as well as access to the Internet.

The centre is open from 10:00 to 16:00, Monday to Friday.
For more information, please telephone 0121 697 8417

Further Information and Support

Macmillan Cancer Support

89 Albert Embankment

London SE1 7UP

Tel: 0808 808 0000

Website: www.macmillan.org.uk

Neuroendocrine Cancer UK

Tel: 0800 434 6476

Website: www.neuroendocrinecancer.org.uk NET Natter support groups through above

Living With Carcinoid

Enton Mill, Encon, Godalming

Surrey GU8 5AH

Tel: 01428 685588

Email: lwcarcinoid@lineone.net

Website: www.livingwithcarcinoid.org

Please use the space below to write down any questions you may have and bring this with you to your next appointment.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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Neuroendocrine
Queen Elizabeth Hospital Birmingham
Mindelsohn Way, Edgbaston
Birmingham, B15 2GW
Telephone: 0121 627 2000

If you require this information in another format, such as a different language, large print, braille or audio version please ask a member of staff or email interpreting.service@uhb.nhs.uk