

LU-177 PSMA Therapy for Men with Advanced Prostate Cancer

What Is Lutetium-177 (Lu-177) PSMA Therapy?

Lutetium-177 PSMA Therapy, or Lutetium-177 Prostate-Specific Membrane Antigen Therapy is a treatment for men with advanced prostate cancer. It is to be used predominantly when the disease has metastasised and other treatments have been poorly tolerated or failed.

How Lutetium-177 PSMA therapy works

PSMA is a type of protein found on the surface of cells on the prostate gland. When someone has prostate cancer there is an increased amount of the PSMA protein on the cell. PSMA will also appear in other parts of the body where the prostate cancer has spread or metastasised. Lutetium-177 PSMA Therapy uses a molecule which attaches itself to the PSMA receptors on the cancer cells. Before it is administered, the PSMA molecule is bound with Lutetium-177, which emits beta radiation, a destructive type of radiation that damages the cancer cells when it is in close proximity to them. Over time it destroys the prostate cancer cells. The PSMA molecule acts as a means of transporting the radiation to the tumour site to damage and kill the cancer cells. As the PSMA travels to the tumour sites it only targets the unhealthy cells preventing radiation exposure to other parts of the body. This is often referred to as Peptide Receptor Radionuclide Therapy (PRRT).

Are there any side effects from the treatment?

As well as the prostate gland and cancer cells, PSMA is found in the salivary glands, lacrimal glands, kidneys and small intestine, therefore allowing radiation exposure to healthy tissue. The adverse result to these areas however is minimal and temporary. Side effects can include a dry mouth, tiredness and a brief fall in blood cell production. Regular follow up blood tests are performed to monitor any adverse radiation damage to healthy tissue.

When would I consider using this treatment?

Lutate therapy is used on people with cancer originating in the prostate. It is very specific and is used for managing metastatic prostate cancer or prostate cancer that is no longer responsive to other lines of treatment therapy. Candidates are identified after a Gallium 68 PSMA PET CT scan has been performed.

How do I prepare for the treatment?

- You will need to have had a baseline 68Ga PSMA PET CT within 3 months of therapy
- You will need blood tests including full blood count, renal function and PSA

- You will need to be well hydrated: drink at least one to two glasses of water before arriving at the clinic

To proceed you will need:

- Normal kidney function and no kidney obstruction
- Normal bone marrow function

What happens during the procedure?

- On arrival you will be given a QOL questionnaire to fill out
- You will then be taken into the treatment area and be asked to change into a gown leaving your underwear on
- The procedure will be explained and you will be asked to sign a consent form
- Your temperature, pulse and blood pressure will be taken
- You will be given some oral medication to take; zantac and maxolon and a dilute lemon drink
- A cannula will be inserted (a small tube is put into a vein in your arm to administer Lutetium-177)
- The 177Lu PSMA will then be administered via a special pump over ten minutes by the PET/nuclear medicine specialist

What happens after the procedure?

- Following this you will be given some more fluids through your drip with 20-40mg of frusemide (a drug that will make you pass urine)
- Your temperature, pulse & blood pressure will be taken again
- You will then be offered something to eat
- Later that afternoon images will be taken on the nuclear medicine SPECT CT scanner to check the distribution of the dose

How long will the procedure take?

- You will be in the department for up to 6-8 hours including the imaging time

Will there be any side effects?

Most side effects are temporary and may include:

- Nausea & vomiting
- Dry mouth
- Dry eyes

Longer term side effects can include some deterioration in renal and bone marrow function. You should refrain from public transport including air travel for at least 3 days.

References

1. Rahbar K et al. German Multicenter Study Investigating 177Lu-PSMA-617 Radioligand Therapy in Advanced Prostate Cancer Patients. J Nucl Med 2017; 58:85-90.
2. Emmett L et al. 177PSMA radionuclide therapy for men with prostate cancer: a review of the current literature and discussion of practical aspects of therapy. J Med Radiat Sci 2017; 64: 52-60.
3. Kulkarni HR et al. PSMA-Based Radioligand Therapy for Metastatic Castration-Resistant Prostate Cancer: The Bad Berka Experience since 2013. J Nucl Med 2016; 57:975-1045.

If you experience bleeding or excessive bruising/swelling, redness or other evidence of infection please contact our clinic nurses between 8.00am and 6.00pm. Outside these hours please contact your local emergency centre or referring doctor.