

PRACTICAL PROTOCOL TIPS: ^{177}Lu -DOTATATE Peptide Receptor Radionuclide Therapy (PRRT):

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^{177}Lu -DOTATATE is a peptide receptor radionuclide therapy (PRRT) that binds to somatostatin receptors. A multidisciplinary team should be involved when treating patients with ^{177}Lu -DOTATATE PRRT, including medical oncology, nuclear medicine physicians and technologists, nurses, radiation safety, and pharmacy.

Clinical Indications: Somatostatin receptor-positive gastroenteropancreatic neuroendocrine tumors in adults

Contraindications: None

Treatment Plan:

- 7.4 gigabecquerels (GBq) [200 milliCuries (mCi)] ^{177}Lu -DOTATATE PRRT intravenously (IV) every 8 weeks for a total of 4 administrations
- Concomitant amino acid infusion to reduce radiation dose to the kidneys
- Anti-emetic medication(s) to reduce nausea and vomiting caused by amino acids

Patient Education/Preparation:

Patient education should include a detailed description of the treatment day and post-treatment care, including possible side effects, instructions for radiation safety to reduce exposure to others, fertility and precautions during sex, and how to safely handle body waste at home.

- Prior to or during ^{177}Lu -DOTATATE PRRT:
 - Discontinue somatostatin analog (SSA) therapy:
 - Long-acting SSA (Octreotide LAR, Lanreotide autogel®) at least 4 weeks prior to ^{177}Lu -DOTATATE PRRT
 - Short-acting SSA (Octreotide s.c.) at least 24 hours prior to ^{177}Lu -DOTATATE PRRT

- Laboratory evaluations, including creatinine, glomerular filtration rate, and complete blood count, should be checked prior to each administration of ¹⁷⁷Lu-DOTATATE PRRT. Decision to proceed with treatment is a clinical decision (refer to prescribing information).
 - Consider having the patient change into scrubs for the treatment day
 - Neuroendocrine hormonal crisis can occur during the infusion or within the first 24 hours. Contact care team right away or seek immediate medical attention should dizziness, flushing, loose stool, trouble breathing, or tightness of throat occur.
 - Notify doctor or nurse if loose stools last more than 24 hours after ¹⁷⁷Lu-DOTATATE PRRT
 - Empty bladder as frequently as possible after the end of the ¹⁷⁷Lu-DOTATATE PRRT infusion on the treatment day and for the next 2 days
- After ¹⁷⁷Lu-DOTATATE PRRT:
 - Keep all lab appointments and notify doctor of any symptoms of shortness of breath, fatigue, fever, chills, cough, bleeding, or bruising

Treatment Instructions:

- Anti-emetic medication 30 minutes prior to starting amino acids infusion and as needed
- Amino acids infusion at least 30 minutes prior (at least 1/8 of total volume) to ¹⁷⁷Lu-DOTATATE PRRT infusion and continues for at least 4 hours (potential of lasting up to 6-7 hours depending upon rate of infusion)
- Slower amino acid infusion rate could help with nausea and vomiting symptoms
- ¹⁷⁷Lu-DOTATATE PRRT infusion for approximately 30 minutes
- Amino acids infusion continues until all volume administered
- If needed, long-acting SSA can be administered at 4-24 hours after the end of the administration of ¹⁷⁷Lu-DOTATATE PRRT

Radiopharmaceutical Identity, Dose, Route of Administration, Infusion Time, and Infusion Duration:

Radiopharmaceutical	Dose	Route of Administration	Infusion Start Time	Infusion Duration
¹⁷⁷ Lu-DOTATATE	7.4 GBq (200 mCi)	IV	At least 30 minutes (or 1/8 of total volume) after initiation of amino acids infusion	Approximately 30 minutes

Pharmaceutical Identity, Dose, Route of Administration and Administration Requirements:

Pharmaceutical	Dose	Route of Administration	Administration Requirements
Anti-emetic	As prescribed	PO or IV	30 minutes prior to starting amino acids infusion and as needed
Amino Acids	18-24 g Lysine and 18-24 g Arginine	IV	At least 30 min (at least 1/8 total volume) prior to starting ¹⁷⁷ Lu-DOTATATE infusion and continue to administer total volume (at least 4 hours total)

Therapeutic Dose Calculations:

- Standard adult dose of 7.4 GBq (200 mCi) given every 8 weeks for 4 total administrations

- If adverse events occur, the dose can be reduced by half and delayed up to 16 weeks as described in the prescribing information

Warnings/Precautions: ^{177}Lu -DOTATATE PRRT is a radioactive therapy and appropriate radiation safety practices should be utilized

References:

1. Abbott A, Sakellis C, Andersen E, et al. Nuts and Bolts of ^{177}Lu -DOTATATE Administration in the Nuclear Medicine Division: Guidance from a Single Institute's Experience. J Nucl Med Technol. 2018. In press.
2. Lutetium Lu 177 dotatate [package insert]. Colliero Giacosa (TO), Italy: Advanced Accelerator Applications USA, Inc; 2018.