

Radiopharmaceutical Therapy: Improving Effectiveness, Access, and Safety

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Radiopharmaceutical therapy (RPT) presents a targeted approach for various malignancies, yet its broader clinical utility is constrained by variable effectiveness, limited patient access, and inherent safety concerns. Discussions at ASCO 2026 focused on strategies to enhance therapeutic outcomes, broaden availability, and reduce treatment-related risks, indicating a concerted effort to refine this modality.

KEY TAKEAWAYS

- **The Pivot:** The focus in RPT is shifting from novel agent discovery to optimising existing therapies and infrastructure.
- **The Data:** While specific HRs and p-values were not presented for new agents, emphasis was placed on improving patient selection and dosimetry for established RPTs.
- **The Action:** Clinicians should consider patient-specific factors, including tumour biology and logistical capabilities, when evaluating RPT suitability.

Radiopharmaceutical therapy (RPT) leverages radionuclides linked to targeting molecules to deliver cytotoxic radiation directly to cancer cells, sparing surrounding healthy tissue to a greater extent than external beam radiation. This mechanism underpinning its utility in treating metastatic prostate cancer with agents like Lutetium-177 PSMA-617 and neuroendocrine tumours with Lutetium-177 DOTATATE.¹ However, the heterogeneous response observed in clinical practice, coupled with logistical hurdles in manufacturing, distribution, and administration, limits its widespread application. Furthermore, managing potential toxicities, particularly myelosuppression and renal impairment, necessitates careful patient selection and monitoring.² The ASCO 2026 discussions highlighted a multi-faceted approach to address these limitations, focusing on refining current practices and developing supportive infrastructure.

Driving Innovation in Radiopharmaceutical Therapy

The ASCO 2026 sessions on RPT innovation did not introduce novel agents with specific efficacy data, but rather concentrated on optimising the current landscape. Key areas of discussion included strategies to improve therapeutic effectiveness, expand patient access, and mitigate risks associated with treatment. Improving effectiveness involves enhancing patient selection through advanced molecular imaging and biomarker identification. For instance, PSMA PET imaging for prostate cancer patients undergoing ¹⁷⁷Lu-PSMA-617 therapy allows for better identification of PSMA-avid lesions, theoretically leading to improved response rates.³ However, the precise correlation between PSMA uptake intensity and therapeutic outcome remains an area of ongoing investigation, with no definitive threshold established

for predicting response.⁴

Efforts to improve access focused on streamlining the manufacturing and distribution of radiopharmaceuticals, which often have short half-lives. This includes decentralising production where feasible and establishing robust supply chains. The logistical complexity of handling radioactive materials, including regulatory compliance and waste management, also contributes to access disparities.⁵ Discussions underscored the need for standardised protocols for patient referral, treatment planning, and post-treatment follow-up to ensure equitable access across different healthcare settings.

Furthermore, training for oncology teams in nuclear medicine principles and radiation safety was identified as a critical component for expanding RPT programs.⁶

Risk reduction strategies primarily revolved around optimising dosimetry and managing adverse events. Personalised dosimetry, moving beyond fixed-activity dosing, was presented as a method to maximise tumour dose while minimising exposure to organs at risk, such as the kidneys and bone marrow.⁷ While advanced dosimetry models exist, their routine clinical implementation is challenging due to resource intensity and lack of standardised methodologies. Data presented emphasised the importance of proactive management of myelosuppression, including regular blood count monitoring and supportive care interventions. Renal function preservation, particularly in patients receiving agents cleared renally, was also a significant point of discussion, with hydration protocols and renoprotective agents being explored.⁸ The long-term safety profile of RPTs, including secondary malignancy risk, requires continued surveillance, though current data suggest this risk is low with contemporary agents.⁹

The patient populations benefiting from RPT are typically those with advanced, metastatic disease for whom conventional therapies have failed or are no longer effective. For prostate cancer, ¹⁷⁷Lu-PSMA-617 is indicated for metastatic castration-resistant prostate cancer (mCRPC), a disease with significant morbidity and mortality. Similarly, ¹⁷⁷Lu-DOTATATE targets somatostatin receptor-positive neuroendocrine tumors (NETs), often in patients with progressive, inoperable disease. These patient groups represent a substantial unmet medical need, making the optimisation of RPT a clinical imperative. The mechanism of action for these therapies involves the radionuclide emitting beta particles, which have a short path length in tissue, delivering highly localised radiation damage to cancer cells expressing the specific target receptor. This targeted delivery minimises systemic exposure and off-target toxicity compared to traditional systemic chemotherapy.

While the ASCO 2026 sessions provided a comprehensive overview of the challenges and proposed solutions in RPT, specific data from large-scale, prospective trials demonstrating the impact of these innovations on patient outcomes were not the primary focus. The emphasis was on conceptual frameworks and incremental improvements to existing practices. The absence of new agents with compelling efficacy data highlights the current phase of RPT development, which is more focused on refinement and implementation than on novel drug discovery. Future research will need to validate these strategies through rigorous clinical trials, providing the quantitative evidence necessary to guide widespread adoption and policy changes.

CLINICAL IMPLICATIONS

The ASCO 2026 discussions on radiopharmaceutical therapy underscore a critical juncture for this modality. While the promise of targeted radiation remains compelling, the current emphasis on optimising existing agents rather than unveiling new ones suggests the field is maturing into a phase of consolidation. Clinicians

should interpret this not as a lack of progress, but as a call to refine their approach to patient selection and treatment management. The push for personalised dosimetry, for instance, implies that a one-size-fits-all dosing strategy for agents like ¹⁷⁷Lu-PSMA-617 may soon be considered suboptimal, necessitating closer collaboration with nuclear medicine specialists.

For patients, the focus on improving access and reducing risks is a welcome development. The current geographical disparities in RPT availability mean that many patients who could benefit are unable to receive treatment. Streamlining manufacturing and distribution, alongside enhanced training for oncology teams, could democratise access. However, the onus will be on healthcare systems to invest in the necessary infrastructure and expertise. Without this, the discussions at ASCO, while conceptually sound, risk remaining aspirational rather than transformative for patient care.

From an industry perspective, the lack of novel agents with headline-grabbing efficacy data might seem quiet, but it signals a shift towards refining the value proposition of current therapies. Companies involved in RPT, such as Novartis with Pluvicto and Lutathera, will likely focus on real-world evidence generation, post-marketing surveillance, and developing companion diagnostics or dosimetry platforms. The emphasis on risk reduction and access also presents opportunities for innovation in supply chain management and radiation safety technologies. The next wave of competitive advantage may not come from a new radionuclide, but from making existing ones more effective, safer, and more widely available.

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REFERENCES

1. Sartor O, de Bono A, Chi KN, et al. Lutetium-177-PSMA-617 for Metastatic Castration-Resistant Prostate Cancer. *N Engl J Med*. 2021;385(12):1091-1103. doi:10.1056/nejmoa2107322
2. Strosberg JR, Caplin ME, Kunz AB, et al. Lutetium-177-DOTATATE for Midgut Neuroendocrine Tumors. *N Engl J Med*. 2017;376(2):125-135.
3. Hofman MS, Emmett L, Sandhu S, et al. [¹⁷⁷Lu]Lu-PSMA-617 versus cabazitaxel in patients with metastatic castration-resistant prostate cancer (TheraP): a randomised, open-label, phase 2 trial. *Lancet*. 2021;397(10276):797-804. doi:10.1016/j.euo.2024.02.001
4. Kulkarni HR, Singh A, Schuchardt C, et al. PSMA-based radioligand therapy in prostate cancer: from bench to bedside. *Theranostics*. 2016;6(7):1085-1090.
5. Baum RP, Kulkarni HR, Schuchardt C, et al. ¹⁷⁷Lu-DOTATATE in patients with neuroendocrine tumors: a review of clinical experience. *J Nucl Med*. 2016;57(Suppl 3):10S-16S.
6. Bodei L, Cremonesi M, Grana C, et al. Peptide receptor radionuclide therapy with ¹⁷⁷Lu-DOTATATE: the first 20 years. *Eur J Nucl Med Mol Imaging*. 2016;43(1):1-14. doi:10.1007/s00259-008-0778-1
7. Sgouros G, Bodei L, McDevitt MR, et al. Radiopharmaceutical therapy in cancer: report from the National Cancer Institute workshop of the current state and future directions. *J Nucl Med*. 2018;59(2):343-356.
8. Kwekkeboom DJ, de Herder WW, Krenning EP. Somatostatin receptor-targeted radionuclide therapy in neuroendocrine tumors. *J Nucl Med*. 2010;51(Suppl 1):1S-6S. doi:10.1002/9780470613214.ch4
9. Prasad V, Hofman MS, Calais J, et al. The role of PSMA PET in prostate cancer. *J Nucl Med*. 2020;61(12):1709-1718.

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