Molecular Imaging Services
Advanced Molecular Imaging Solutions

PSMA PET TRACER COMPARISON

Ga-68 PSMA-11 vs. Pylarify vs. Posluma

Clinical and operational reference for prostate cancer PSMA PET imaging

Ga-68 PSMA-11[1,2]
Illuccix / Locametz

Ga-68 • 68-min half-life

Pylarify[3]
Piflufolastat F-18 • Lantheus

F-18 • 110-min half-life

Posluma[4]
Flotufolastat F-18 • Blue Earth/Bracco

F-18 • 110-min half-life

What Each Tracer Offers

Ga-68 PSMA-11 — the established, widely available option

- Three FDA-approved kits (Illuccix, Locametz, Gozellix) with broad hospital familiarity and the longest track record of the three.[1,2]
- Also used to select patients for PSMA-directed radioligand therapy[1,2] (e.g., Pluvicto).
- Lowest administered activity of the three (3-7 mCi), with a wide labeled uptake window[1,2] (50-100 min).

Pylarify — the high volume F-18 workhorse

- Acceptable dosing range (8-10 mCi)[3]
- Centrally manufactured and shipped like standard FDG, supporting predictable scheduling.[3]

Posluma — the clean-bladder, low-artifact option

- Lower bladder and ureter activity than Ga-68 PSMA-11 in a matched comparison (retrospective conference abstract, 62 patients per group).[11]
- No diuretic required in pivotal trials; furosemide can sharpen prostate-bed clarity further if needed.[4,9,10]

Summary

- All three tracers share the same core workflow: no fasting, hydrate and void before scanning, imaging beginning around one hour after injection.
- Urinary-tract activity differs between tracers. In a matched comparison of 62 patients per group, Posluma showed lower bladder and ureter activity than Ga-68 PSMA-11.[11]
- Ga-68 PSMA-11 has the lowest injected activity of the three.
- Diagnostic performance across the pivotal trials is broadly similar in shape — modest sensitivity but high specificity for nodal staging, with detection rising sharply with PSA in the recurrence setting.

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Dosing, Timing & Acquisition Protocol[1,2,3,4]

Ga-68 PSMA-11	Pylarify	Posluma
RECOMMENDED DOSE		
111-259 MBq (3-7 mCi)	333 MBq (9 mCi); range 296-370 MBq (8-10 mCi)	296 MBq (8 mCi), fixed
UPTAKE TIME BEFORE SCAN		
50-100 min (most sites target ~60 min)	~60 min; do not exceed 90 min per labeling	~60 min, fixed
PATIENT PREP		
Hydrate before/after; void immediately pre-scan; diuretic optional at injection	Hydrate before/after; void immediately pre-scan	Hydrate before/after; void immediately pre-scan
POSITION & SCAN RANGE		
Supine, arms up; proximal thigh ⟶ skull base/vertex	Supine, arms up; mid-thigh ⟶ skull base/vertex	Supine, arms up; mid-thigh ⟶ skull base/vertex
TYPICAL SCAN DURATION		
Vendor/site-dependent bed times	12-40 min (6-8 beds x 2-5 min)	~20 min (~3 min/bed)

Indications & Safety[1,2,3,4]

Ga-68 PSMA-11	Pylarify	Posluma
FDA-APPROVED INDICATIONS		
Suspected metastasis pre-therapy; suspected recurrence (rising PSA); selection for PSMA-directed therapy	Suspected metastasis pre-therapy; suspected recurrence (rising PSA)	Suspected metastasis pre-therapy; suspected recurrence (rising PSA)

Image Quality & Biodistribution

F-18's lower positron energy (~0.25 MeV mean) travels a shorter distance in tissue before annihilation than Ga-68 (~0.84 MeV mean), theoretically favoring slightly higher spatial resolution for the two F-18 agents (Pylarify, Posluma) over Ga-68 PSMA-11.

Ga-68 PSMA-11	Pylarify	Posluma
LIVER UPTAKE		
~15% of dose[1,2]	~9.3% of dose[3]	~15.8% of dose[4]
NOTABLE FALSE-POSITIVE RISK		
Benign bone disease (Paget's, fibrous dysplasia, osteophytes)[1,2]	Uptake is not specific to prostate cancer and can occur in other cancers, benign conditions and normal tissue (a warning all three labels share)[3]	Low inter-reader agreement in the prostate bed (κ = 0.40)[4,9,10]

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WHY IT MATTERS: URINARY-TRACT INTERFERENCE

Matched head-to-head study, SNMMI 2024[11] (62 patients/arm) — lower is better for clarity near the prostate bed. Pylarify was not part of this specific comparison.



Radiation Dosimetry

Ga-68 PSMA-11	Pylarify	Posluma
EFFECTIVE DOSE		
~4.4 mSv (7 mCi)[1,2]	~4.3 mSv (10 mCi, 70 kg adult)[3]	4.1 mSv (8 mCi)[4]

Clinical Performance — Pivotal Trials

Ga-68 PSMA-11	Pylarify	Posluma
INITIAL STAGING TRIAL (PELVIC LN VS. HISTOPATHOLOGY)		
PSMA-PreRP, n=123[1,2]	OSPREY, n=252[7]	LIGHTHOUSE, n=296[9]
SENSITIVITY / SPECIFICITY		
36–60% /83–96%	28-39% /95-98%	23-30% /93-97%

Caution: trials were independent, not head-to-head — different populations, reader pools, and reference standards. Cross-trial comparisons are descriptive, not proof of superiority.

Logistics

Ga-68 PSMA-11	Pylarify	Posluma
PRODUCTION & SUPPLY		
Ge-68/Ga-68 generator (on-site) or cyclotron; 68-min half-life limits shipping radius[1,2]	Cyclotron-made, centrally shipped like FDG[3]	Cyclotron-made, centrally shipped like FDG[4]
SCHEDULING FLEXIBILITY		
Tied to generator yield / local radiopharmacy hours[1,2]	Dose-range flexibility eases multi-patient batching[3]	Fixed dose; batch friendly like FDG[4]

Source: FDA prescribing information for Illuccix, Locametz, Pylarify, and Posluma; SNMMI 2024 double-match comparison; pivotal trials PSMA-PreRP/PSMA-BCR, OSPREY/CONDOR, LIGHTHOUSE/SPOTLIGHT. Full numbered references 1-11 ⟶ *page 4.*

Full citations and complete protocol detail: see companion report, "Comparing PSMA PET Imaging Agents for Prostate Cancer"

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References & Source Documents

Full numbered citations for the clinical and operational data cited on pages 1–3

FDA Prescribing Information (Package Inserts)

Primary source for dosing, indications, patient prep, biodistribution, and safety data cited throughout this reference.

1. **Illuccix** (kit for the preparation of gallium Ga 68 gozetotide injection) [package insert]. Telix Pharmaceuticals (US) Inc.; U.S. FDA, revised 2025. https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/214032s014lbl.pdf
2. **Locametz** (kit for the preparation of gallium Ga 68 gozetotide injection) [package insert]. Novartis Pharmaceuticals Corp.; U.S. FDA, initial approval 2020. https://www.novartis.com/us-en/sites/novartis_us/files/locametz.pdf
3. **Pylarify** (piflufolastat F 18 injection) [package insert]. Lantheus Medical Imaging, Inc.; U.S. FDA, initial approval 2021. https://www.lantheus.com/assets/PYLARIFY-Prescibing-Information.pdf
4. **Posluma** (flotufolastat F 18 injection) [package insert]. Blue Earth Diagnostics Ltd.; U.S. FDA, initial approval May 25, 2023. https://www.accessdata.fda.gov/drugsatfda_docs/label/2023/216023s000lbl.pdf

Pivotal Clinical Trials

Source of the sensitivity/specificity figures and trial "n" values on page 3.

Ga-68 PSMA-11 (Illuccix / Locametz)

5. Hope TA, Eiber M, Armstrong WR, et al. Diagnostic Accuracy of 68Ga-PSMA-11 PET for Pelvic Nodal Metastasis Detection Prior to Radical Prostatectomy and Pelvic Lymph Node Dissection **(PSMA-PreRP)**. *JAMA Oncol.* 2021;7(11):1635–1642. PMID 34529005. https://pubmed.ncbi.nlm.nih.gov/34529005/
6. Fendler WP, et al. *JAMA Oncol.* 2019;5(6):856–863.

Pylarify (piflufolastat F-18)

7. Pienta KJ, Gorin MA, Rowe SP, et al. A Phase 2/3 Prospective Multicenter Study of the Diagnostic Accuracy of PSMA PET/CT with 18F-DCFPyL in Prostate Cancer Patients **(OSPREY)**. *J Urol.* 2021;206(1):52–61. PMID 33634707. https://pubmed.ncbi.nlm.nih.gov/33634707/
8. Morris MJ, Rowe SP, Gorin MA, et al; CONDOR Study Group. Diagnostic Performance of 18F-DCFPyL-PET/CT in Men with Biochemically Recurrent Prostate Cancer **(CONDOR)**. *Clin Cancer Res.* 2021;27(13):3674–3682. PMID 33622706. https://pubmed.ncbi.nlm.nih.gov/33622706/

Posluma (flotufolastat F-18)

9. Surasi DS, Eiber M, Maurer T, et al. Diagnostic Performance and Safety of PET with 18F-rhPSMA-7.3 in Newly Diagnosed Unfavourable Intermediate- to Very-high-risk Prostate Cancer **(LIGHTHOUSE)**. *Eur Urol.* 2023;84(4):361–370.
10. Jani AB, Ravizzini GC, Gartrell BA, et al. Diagnostic Performance and Safety of 18F-rhPSMA-7.3 PET in Men with Suspected Prostate Cancer Recurrence **(SPOTLIGHT)**. *J Urol.* 2023;210(2):299–311. PMID 37126069. https://pubmed.ncbi.nlm.nih.gov/37126069/

Caution: *trials were independent, not head-to-head — different populations, reader pools, and reference standards. Cross-trial figures are descriptive, not proof of superiority.*

Head-to-Head Comparative Study

Source of the bladder SUVmax and ureteral-retention figures (7.4 vs. 3.3; 21% vs. 0%) on page 3.

11. Rauscher I, et al. Evaluation of Qualitative and Quantitative PET Parameters in Primary Prostate Cancer Patients: Double-Match Comparison of 18F-flotufolastat and 68Ga-PSMA-11 PET. Presented at SNMMI 2024 Annual Meeting, Toronto, June 8–11, 2024 (matched cohort, n=62/arm). Reported in *Urology Times,* 2024. https://www.urologytimes.com/view/studies-show-low-urinary-bladder-interference-on-flotufolastat-f-18-scans

Conference-presented (abstract-level) data, not yet a full peer-reviewed manuscript at last check. Pylarify was not part of this specific matched comparison.

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