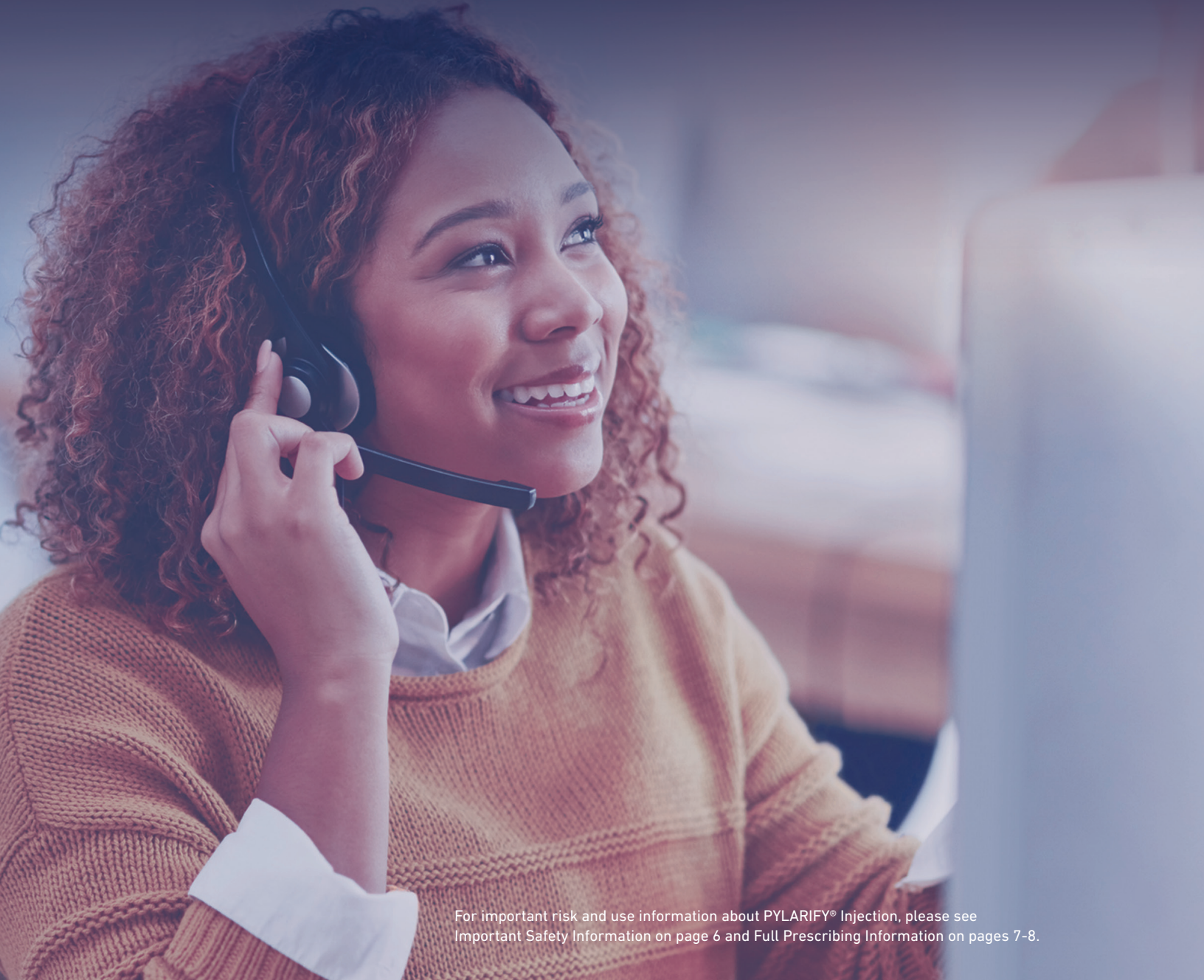




**PYLARIFY[®] (PIFLUFOLASTAT F 18) INJECTION FOR PET/CT
CODING AND
BILLING GUIDE**



This resource highlights product, procedure, and diagnosis coding information relevant to the use of PYLARIFY[®] (piflufolastat F 18) injection PET/CT that may be applicable for billing purposes.



PRODUCT CODES:

Providers should report the appropriate Healthcare Common Procedure Coding System (HCPCS) for PYLARIFY[®]. In the absence of a product specific code, a not otherwise classified (NOC) HCPCS is required. Payers may also require the National Drug Code (NDC).

HCPCS Code	Description
A9595	piflufolastat F-18, diagnostic, 1 millicurie
NDC	Description
# 71258-0022-00	PYLARIFY [®] (single-dose syringe)
Billing Units	Units of billing are 1 millicurie (mCi); patient dose is 9 millicuries (mCi)



2023 CURRENT PROCEDURAL TERMINOLOGY (CPT) CODES ASSOCIATED WITH PET/CT IMAGING

Providers should choose the code that accurately describes the procedure performed and is supported by documentation in the medical record. The CPT codes for PET/CT imaging are **78811-78816** and based on the PYLARIFY[®] Prescribing Information. The following CPT codes should be considered for PYLARIFY[®] PET or PET/CT imaging to manage patients with suspected metastasis who are candidates for initial definitive therapy or suspected recurrence based on elevated PSA.

Current Procedural Terminology (CPT[®]) Codes Associated with PET/CT Imaging

Code	Description
78811	Positron emission tomography (PET) imaging; limited area (eg, chest, head/neck)
78812	Positron emission tomography (PET) imaging; skull base to mid-thigh
78813	Positron emission tomography (PET) imaging; whole body
78814	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; limited area (eg, chest, head/neck)
78815	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; skull base to mid thigh
78816	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; whole body

PET/CT scan coding should be reported under the CPT code that is most specific for the procedure.

Current Procedural Terminology (CPT(r)) is (c)2017, American Medical Association. All rights reserved. CPT is a registered trademark of the American Medical Association. The American Medical Association assumes no liability for data contained or not contained herein.



MODIFIERS WITH PET IMAGING

Oncologic PET/CT imaging for Medicare may be billed using either the PI or PS modifier. The PS modifier is appropriate for PET/CT imaging of recurrent prostate cancer since recurrence occurs after the completion of initial treatment. The PI modifier is used to inform the initial treatment strategy of tumors that are biopsy proven or strongly suspected of being cancerous based on other diagnostic tests.

ICD-10 Coding Associated With PET/CT Imaging in the Diagnosis and Management of Prostate Cancer

Diagnosis coding is at the provider's discretion. Providers should select the ICD-10 code(s) that most appropriately describes the patient's clinical condition, symptoms, and documented findings. Examples include:

2023 ICD-10 Coding Guidelines Associated with PET/CT Scans of the Prostate

Code	Description
C61	Malignant neoplasm of prostate
C79.82	Secondary malignant neoplasm of genital organs must be billed accompanied by C61
Z19.1	Hormone sensitive malignancy
Z19.2	Hormone resistant malignancy
Z85.46	Personal history of malignant neoplasm of prostate
R97.21	Rising PSA following treatment for malignant neoplasm of prostate

Note: ICD-10 code Z85.46 (Personal history of malignant neoplasm of prostate) is not sufficient and must be accompanied by C61 or R97.21

Providers are encouraged to check with specific payer and/or health plan since coverage criteria and diagnosis may vary.



SAMPLE CLAIM FORM: PHYSICIAN OFFICE (CMS-1500)

PYLARIFY[®] and the associated services provided in a physician office are billed on the CMS-1500 claim form or its electronic equivalent. A sample CMS-1500 claim form for billing PYLARIFY[®] is provided below. This sample claim form is only an example. It is always the provider’s responsibility to determine the appropriate health care setting and to submit true and correct claims for the products and services rendered. Providers should contact third-party payers for specific information on their coding, coverage, payment policies, and fee schedules.

HEALTH INSURANCE CLAIM FORM
APPROVED BY NATIONAL UNIFORM CLAIM COMMITTEE (NUCC) 02/12

PATIENT AND INSURED INFORMATION

PATIENT INFORMATION AND SIGNATURE

Box 21: Diagnosis code (ICD-10)

Box 24B: Place of service

Box 24D: CPT code

Box 24D: HCPCS code

Box 24D: Include the appropriate modifier

Box 24C: # of units

NUCC Instruction Manual available at: www.nucc.org PLEASE PRINT OR TYPE APPROVED OMB-0938-1197 FORM 1500 (02-12)



SAMPLE CLAIM FORM: HOSPITAL OUTPATIENT (UB-04)

PYLARIFY[®] and the associated services provided in a hospital outpatient setting are billed on the UB-04 claim form or its electronic equivalent. A sample UB-04 claim form for billing PYLARIFY[®] is provided below. This sample claim form is only an example. It is always the provider’s responsibility to determine the appropriate health care setting and to submit true and correct claims for the products and services rendered. Providers should contact third-party payers for specific information on their coding, coverage, payment policies, and fee schedules.

The image shows a sample UB-04 Hospital Outpatient claim form. Several fields are highlighted with blue boxes and labeled with callouts:

- Box 1:** Patient information and signature (points to the top section of the form).
- Box 4:** Place of service (4-digit code) (points to the 'PLACE OF SERVICE' field).
- Box 42:** Revenue code (points to the 'REVENUE CODE' field).
- Box 44:** HCPCS code (points to the 'HCPCS CODE' field).
- Box 44:** CPT code (points to the 'CPT CODE' field).
- Box 46:** # of units (points to the 'UNITS' field).
- Box 67:** Diagnosis code (ICD-10) (points to the 'DIAGNOSIS CODE' field).

This information is taken from publicly available sources. It is not intended to guarantee, increase, or maximize reimbursement by any payer. It is the provider's responsibility to report the codes that accurately describe the products and services furnished to individual patients. Reimbursement is dynamic. We recommend that providers consult their payer organizations regarding local policies and rates along with any required claim information.

Laws and regulations regarding reimbursement change frequently and providers are solely responsible for all decisions related to coding and billing including determining, if and under what circumstances, it is appropriate to seek reimbursement for products and services and obtaining pre-authorization, if necessary. Progenics Pharmaceuticals, Inc. does not make any representation or warranty about the completeness or accuracy of this information and will bear no responsibility for the results or consequences of its application.

Please refer to the current CPT[®], ICD-10-CM, and HCPCS manuals and follow the "Documentation Guidelines for Evaluation and Management Services" for the most detailed and up-to-date information. Current Procedural Terminology (CPT[®]) is a copyright and trademark of the American Medical Association (AMA). All Rights Reserved.

For additional support, please contact the PYLARIFY[®] Reimbursement Hotline at 844-339-8514

Indication

PYLARIFY[®] (piflufolastat F 18) Injection is a radioactive diagnostic agent indicated for positron emission tomography (PET) of prostate-specific membrane antigen (PSMA) positive lesions in men with prostate cancer:

- with suspected metastasis who are candidates for initial definitive therapy.
- with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level.

Important Safety Information

Contraindications

None.

Warnings and Precautions

Risk of Image Misinterpretation

Imaging interpretation errors can occur with PYLARIFY imaging. A negative image does not rule out the presence of prostate cancer and a positive image does not confirm the presence of prostate cancer. The performance of PYLARIFY for imaging of patients with biochemical evidence of recurrence of prostate cancer seems to be affected by serum PSA levels. The performance of PYLARIFY for imaging of metastatic pelvic lymph nodes prior to initial definitive therapy seems to be affected by risk factors such as Gleason score and tumor stage. PYLARIFY uptake is not specific for prostate cancer and may occur with other types of cancer as well as non-malignant processes and in normal tissues. Clinical correlation, which may include histopathological evaluation of the suspected prostate cancer site, is recommended.

Hypersensitivity Reactions

Monitor patients for hypersensitivity reactions, particularly patients with a history of allergy to other drugs and foods. Reactions may be delayed. Always have trained staff and resuscitation equipment available.

Radiation Risks

Diagnostic radiopharmaceuticals, including PYLARIFY, expose patients to radiation. Radiation exposure is associated with a dose-dependent increased risk of cancer. Ensure safe handling and preparation procedures to protect patients and health care workers from unintentional radiation exposure. Advise patients to hydrate before and after administration and to void frequently after administration.

Adverse Reactions

The most frequently reported adverse reactions were headaches, dysgeusia and fatigue, occurring at rate of $\leq 2\%$ during clinical studies with PYLARIFY. In addition, a delayed hypersensitivity reaction was reported in one patient (0.2%) with a history of allergic reactions.

Drug Interactions

Androgen deprivation therapy (ADT) and other therapies targeting the androgen pathway, such as androgen receptor antagonists, may result in changes in uptake of PYLARIFY in prostate cancer. The effect of these therapies on performance of PYLARIFY PET has not been established.

To report suspected adverse reactions for PYLARIFY, call 1-800-362-2668 or contact FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

For important risk and use information about PYLARIFY Injection, please see [Full Prescribing information](#) on page 7-8.

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use **PYLARIFY® safely and effectively. See full prescribing information for PYLARIFY.**

PYLARIFY® (piflufolastat F 18) injection, for intravenous use

Initial U.S. Approval: 2021

INDICATIONS AND USAGE

PYLARIFY is a radioactive diagnostic agent indicated for positron emission tomography (PET) of prostate-specific membrane antigen (PSMA) positive lesions in men with prostate cancer:

- with suspected metastasis who are candidates for initial definitive therapy.
- with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level. (1)

DOSAGE AND ADMINISTRATION

Recommended dose is 333 MBq (9 mCi) with an acceptable range of 296 MBq to 370 MBq (8 mCi to 10 mCi), administered as a bolus intravenous injection. (2.2)

Initiate imaging approximately 60 minutes after PYLARIFY administration. The patient should void immediately prior to initiation of imaging. Image acquisition should start from mid-thigh and proceed to the skull vertex. (2.3, 2.4)

See full prescribing information for additional preparation, handling, administration, imaging, and radiation dosimetry information. (2)

DOSAGE FORMS AND STRENGTHS

Injection: clear, colorless solution in a multiple-dose vial containing 37 MBq/mL to 2,960 MBq/mL (1 mCi/mL to 80 mCi/mL) of piflufolastat F 18 at calibration date and time. (3)

CONTRAINDICATIONS

None. (4)

WARNINGS AND PRECAUTIONS

- Risk of Image Misinterpretation:** PYLARIFY uptake can be seen in a variety of tumor types as well as in non-malignant processes and normal tissues. Image interpretation errors can occur with PYLARIFY imaging. (5.1)
- Hypersensitivity Reactions:** Monitor patients for hypersensitivity reactions, particularly patients with a history of allergy to other drugs and foods. (5.2)
- Radiation Risk:** Ensure safe drug handling to protect patients and health care workers from unintentional radiation exposure. (5.3)

ADVERSE REACTIONS

The most common reported adverse reactions are headache, dysgeusia, and fatigue. (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Progenics Pharmaceuticals, Inc. at 1-800-362-2668 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

See 17 for PATIENT COUNSELING INFORMATION.

Revised: 5/2021

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FULL PRESCRIBING INFORMATION**1 INDICATIONS AND USAGE**

PYLARIFY is indicated for positron emission tomography (PET) of prostate-specific membrane antigen (PSMA) positive lesions in men with prostate cancer:

- with suspected metastasis who are candidates for initial definitive therapy.
- with suspected recurrence based on elevated serum prostate-specific antigen (PSA) level.

2 DOSAGE AND ADMINISTRATION**2.1 Radiation Safety – Drug Handling**

PYLARIFY is a radioactive drug. Only authorized persons qualified by training and experience should receive, use, and administer PYLARIFY. Handle PYLARIFY with appropriate safety measures to minimize radiation exposure during administration [see *Warnings and Precautions* (5.3)]. Use waterproof gloves and effective radiation shielding, including syringe shields, when preparing and handling PYLARIFY.

2.2 Recommended Dosage and Administration Instructions**Recommended Dose**

The recommended amount of radioactivity to be administered for PET imaging is 333 MBq (9 mCi) with an acceptable range of 296 MBq to 370 MBq (8 mCi to 10 mCi) administered as a single bolus intravenous injection.

Preparation and Administration

- Use aseptic technique and radiation shielding when preparing and administering PYLARIFY.
- Visually inspect the radiopharmaceutical solution. Do not use if it contains particulate matter or if it is discolored (PYLARIFY is a clear, colorless solution).
- Calculate the necessary volume to administer based on calibration time and required dose. PYLARIFY may be diluted with 0.9% Sodium Chloride Injection, USP.
- Assay the dose in a suitable dose calibrator prior to administration.

Post Administration Instructions

- Follow the PYLARIFY injection with an intravenous flush of 0.9% Sodium Chloride Injection USP.
- Dispose of any unused PYLARIFY in compliance with applicable regulations.

2.3 Patient Preparation

Instruct patients to drink water to ensure adequate hydration prior to administration of PYLARIFY and to continue drinking and voiding frequently for the first few hours following administration to reduce radiation exposure [see *Warnings and Precautions* (5.3)].

2.4 Image Acquisition

The recommended start time for image acquisition is 60 minutes after PYLARIFY injection. Starting image acquisition more than 90 minutes after injection may adversely impact imaging performance. Patients should void immediately prior to image acquisition. Position the patient supine with arms above the head. Image acquisition should start from mid-thigh and proceed to the skull vertex. Scan duration is 12 minutes to 40 minutes depending on the number of bed positions (typically 6 to 8) and acquisition time per bed position (typically 2 minutes to 5 minutes).

2.5 Image Display and Interpretation

PYLARIFY binds to prostate-specific membrane antigen (PSMA). Based on the intensity of the signals, PET images obtained using PYLARIFY indicate the presence of PSMA in tissues. Lesions should be considered suspicious if uptake is greater than physiologic uptake in that tissue or greater than adjacent background if no physiologic uptake is expected. Tumors that do not express PSMA will not be visualized. Increased uptake in tumors is not specific for prostate cancer [see *Warnings and Precautions* (5.1)].

2.6 Radiation Dosimetry

Radiation absorbed dose estimates are shown in Table 1 for organs and tissues of adult male patients from intravenous administration of PYLARIFY. The radiation effective dose resulting from administration of 370 MBq (10 mCi) of PYLARIFY to an adult weighing 70 kg is estimated to be 4.3 mSv. The radiation doses for this administered dose to the critical organs, which are the kidneys, liver, and spleen, are 45.5 mGy, 13.7 mGy, and 10 mGy respectively. When PET/CT is performed, exposure to radiation will increase by an amount dependent on the settings used in the CT acquisition.

Table 1. Estimated Radiation Absorbed Doses in Organs/Tissues in Adults who Received PYLARIFY

Organ/Tissue	Mean Absorbed dose per Unit Administered Activity	
	(mGy/MBq)	
	Mean	Standard Deviation
Adrenal glands	0.0131	0.0013
Brain	0.0021	0.0003
Breasts	0.0058	0.0007
Gallbladder wall	0.0141	0.0012
Lower large intestine wall	0.0073	0.001
Small intestine	0.0089	0.0009
Stomach wall	0.0092	0.0008
Upper large intestine wall	0.0091	0.0009
Heart wall	0.0171	0.0022
Kidneys	0.123	0.0434
Liver	0.037	0.0058
Lungs	0.0102	0.0016
Muscle	0.0069	0.0008
Pancreas	0.0124	0.0011
Red bone marrow	0.0071	0.0007
Osteogenic cells	0.0099	0.0012
Skin	0.0052	0.0006

(continues next column)

Spleen	0.0271	0.0115
Testes	0.0059	0.0008
Thymus gland	0.007	0.0008
Thyroid	0.0062	0.0009
Urinary bladder wall	0.0072	0.001
Effective dose	0.0116	0.0022
	(mSv/MBq)	mSv/MBq

3 DOSAGE AND STRENGTHS

Injection: clear, colorless solution in a multiple-dose vial containing 37 MBq/mL to 2,960 MBq/mL (1 mCi/mL to 80 mCi/mL) of piflufolastat F 18 at calibration date and time.

4 CONTRAINDICATIONS

None.

5 WARNINGS AND PRECAUTIONS**5.1 Risk of Image Misinterpretation**

Imaging interpretation errors can occur with PYLARIFY imaging. A negative image does not rule out the presence of prostate cancer and a positive image does not confirm the presence of prostate cancer. The performance of PYLARIFY for imaging of patients with biochemical evidence of recurrence of prostate cancer seems to be affected by serum PSA levels [see *Clinical Studies* (14)]. The performance of PYLARIFY for imaging of metastatic pelvic lymph nodes prior to initial definitive therapy seems to be affected by risk factors such as Gleason score and tumor stage [see *Clinical Studies* (14)]. PYLARIFY uptake is not specific for prostate cancer and may occur with other types of cancer as well as non-malignant processes and in normal tissues. Clinical correlation, which may include histopathological evaluation of the suspected prostate cancer site, is recommended.

5.2 Hypersensitivity Reactions

Monitor patients for hypersensitivity reactions, particularly patients with a history of allergy to other drugs and foods. Reactions may not be immediate. Always have trained staff and resuscitation equipment available.

5.3 Radiation Risks

Diagnostic radiopharmaceuticals, including PYLARIFY, expose patients to radiation [see *Dosage and Administration* (2.6)]. Radiation exposure is associated with a dose-dependent increased risk of cancer. Ensure safe handling and preparation procedures to protect patients and health care workers from unintentional radiation exposure. Advise patients to hydrate before and after administration and to void frequently after administration [see *Dosage and Administration* (2.3)].

6 ADVERSE REACTIONS**6.1 Clinical Trials Experience**

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

The safety of PYLARIFY was evaluated in 593 patients, each receiving one dose of PYLARIFY. The average injected activity was 340 ± 26 MBq (9.2 ± 0.7 mCi).

The adverse reactions reported in >0.5% of patients within the studies are shown in Table 2. In addition, a hypersensitivity reaction was reported in one patient (0.2%) with a history of allergic reaction.

Table 2 Adverse Reactions with a Frequency >0.5% in Patients Who Received PYLARIFY* (n = 593)

Adverse Reaction	n (%)
Headache	13 (2%)
Dysgeusia	10 (2%)
Fatigue	7 (1%)

7 DRUG INTERACTIONS**Androgen deprivation therapy and other therapies targeting the androgen pathway**

Androgen deprivation therapy (ADT) and other therapies targeting the androgen pathway, such as androgen receptor antagonists, may result in changes in uptake of PYLARIFY in prostate cancer. The effect of these therapies on performance of PYLARIFY PET has not been established.

8 USE IN SPECIFIC POPULATIONS**8.1 Pregnancy****Risk Summary**

PYLARIFY is not indicated for use in females. There is no information on the risk of adverse developmental outcomes in pregnant women or animals with the use of piflufolastat F 18. All radiopharmaceuticals, including PYLARIFY, have the potential to cause fetal harm depending on the fetal stage of development and the magnitude of the radiation dose.

8.2 Lactation**Risk Summary**

PYLARIFY is not indicated for use in females. There is no information on the presence of piflufolastat F 18 in human milk, the effect on the breastfed infant, or the effect on milk production.

8.4 Pediatric Use

The safety and effectiveness of PYLARIFY in pediatric patients have not been established.

8.5 Geriatric Use

Of the 593 patients in completed clinical studies of PYLARIFY, 355 (60%) were ≥65 years old, while 76 (12.8%) were ≥75 years old. The efficacy and safety of PYLARIFY appear similar in adult and geriatric patients with prostate cancer, although the number of patients in the trials was not large enough to allow definitive comparison.

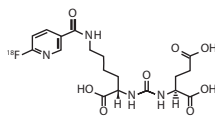
10 OVERDOSAGE

In the event of an overdose of PYLARIFY, reduce the radiation absorbed dose to the patient where possible by increasing the elimination of the drug from the body using hydration and frequent bladder voiding. A diuretic might also be considered. If possible, an estimate of the radiation effective dose administered to the patient should be made.

11 DESCRIPTION

11.1 Chemical Characteristics

PYLARIFY contains fluorine 18 (F 18), radiolabeled prostate-specific membrane antigen inhibitor imaging agent. Chemically piflufolastat F 18 is 2-(3-(1-carboxy-5-[(6-[18F]fluoro-pyridine-3-carbonyl)-amino]-pentyl)ureido)-pentanedioic acid. The molecular weight is 441.4 and the structural formula is:



The chiral purity of the unlabeled piflufolastat F 18 precursor is greater than 99% (S,S).

PYLARIFY is a sterile, non-pyrogenic, clear, colorless solution for intravenous injection. Each milliliter contains 37 to 2,960 MBq (1 to 80 mCi) piflufolastat F 18 with ≤ 0.01 $\mu\text{g}/\text{mCi}$ of piflufolastat at calibration time and date, and ≤ 78.9 mg ethanol in 0.9% sodium chloride injection USP. The pH of the solution is 4.5 to 7.0.

PYLARIFY has a radiochemical purity of at least 95% up to 10 hours following end of synthesis, and specific activity of at least 1000 mCi/ μmol at the time of administration.

11.2 Physical Characteristics

PYLARIFY is radiolabeled with fluorine 18 (F 18), a cyclotron produced radionuclide that decays by positron emission to stable oxygen 18 with a half-life of 109.8 minutes. The principal photons useful for diagnostic imaging are the coincident pair of 511 keV gamma photons, resulting from the interaction of the emitted positron with an electron (Table 3).

Table 3. Principal Radiation Produced from Decay of Fluorine 18 Radiation

	Radiation Energy (keV)	Abundance (%)
Positron	249.8	96.9
Gamma	511	193.5

11.3 External Radiation

The point source air-kerma coefficient for F 18 is 3.75×10^{-17} Gy m²/(Bq s). The first half-value thickness of lead (Pb) for F 18 gamma rays is approximately 6 mm. The relative reduction of radiation emitted by F 18 that results from various thicknesses of lead shielding is shown in Table 4. The use of 8 cm Pb decreases the radiation transmission (i.e. exposure) by a factor of about 10,000.

Table 4. Radiation Attenuation of 511 keV Gamma Rays by Lead Shielding

Shield Thickness cm of Lead (Pb)	Coefficient of Attenuation
0.6	0.5
2	0.1
4	0.01
6	0.001
8	0.0001

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Piflufolastat F 18 binds to cells that express PSMA, including malignant prostate cancer cells, which usually overexpress PSMA. Fluorine-18 (F 18) is a β^+ emitting radionuclide that enables positron emission tomography.

12.2 Pharmacodynamics

The relationship between piflufolastat F 18 plasma concentrations and image interpretation has not been studied.

12.3 Pharmacokinetics

Distribution

Following intravenous administration of piflufolastat F 18, blood levels decline in a biphasic fashion. The distribution half-life is 0.17 ± 0.044 hours and the elimination half-life is 3.47 ± 0.49 hours.

Piflufolastat F 18 distributes to the kidneys (16.5% of administered activity), liver (9.3%), and lung (2.9%), within 60 minutes of intravenous administration.

Elimination

Elimination is by urinary excretion. In the first 8 hours post-injection, approximately 50% of administered radioactivity is excreted in the urine.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Animal studies to assess the carcinogenicity or mutagenic potential of piflufolastat have not been conducted. However, piflufolastat has the potential to be mutagenic because of the F 18 radioisotope.

No animal studies with piflufolastat have been performed to evaluate the potential impairment of fertility in males or females.

14 CLINICAL STUDIES

The safety and efficacy of PYLARIFY were evaluated in two prospective, open-label, multi-center clinical studies in men with prostate cancer: OSPREY (NCT02981368) and CONDOR (NCT03739684).

OSPREY

OSPREY enrolled a cohort of 268 men with biopsy-proven prostate cancer who were considered candidates for radical prostatectomy and pelvic lymph node dissection. These patients were all considered to have high risk disease based on criteria such as Gleason score, PSA level, and tumor stage. Each patient received a single PYLARIFY PET/CT from mid-thigh to skull vertex.

Three central readers independently interpreted each PET scan for the presence of abnormal PYLARIFY uptake in pelvic lymph nodes in multiple subregions, including the common iliac lymph nodes. The readers were blinded to all clinical information. While readers also recorded the presence of PYLARIFY PET-positive lesions in the prostate gland and outside the pelvis, those results were not included in the primary efficacy analysis.

A total of 252 patients (94%) underwent standard-of-care prostatectomy and template pelvic lymph node dissection and had sufficient histopathology data for evaluation of the pelvic lymph nodes. Surgical specimens were separated into three regions: left hemipelvis, right hemipelvis, and other. For each patient, PYLARIFY PET results and histopathology results obtained from dissected pelvic lymph nodes were compared by surgical region. PET results in locations that were not dissected were excluded from analysis.

For the 252 evaluable patients, the mean age was 64 years (range 46 to 84 years), and 87% were white. The median serum PSA was 9.3 ng/mL. The total Gleason score was 7 for 19%, 8 for 46%, and 9 for 34% of the patients, with the remainder of the patients having Gleason scores of 6 or 10. Table 5 shows PYLARIFY PET performance by reader through comparison to pelvic lymph node histopathology at the patient-level with region matching, such that at least one true positive region defines a true positive patient. Approximately 24% of the evaluable patients had pelvic lymph node metastases based on histopathology (95% confidence interval: 19%, 29%).

Table 5: Patient-Level, Region-Matched Performance of PYLARIFY PET for Detection of Pelvic Lymph Node Metastasis in OSPREY (n=252)

	Reader 1	Reader 2	Reader 3
True Positive	23	17	23
False Positive	7	4	9
False Negative	36	43	37
True Negative	186	188	183
Sensitivity, % (95% CI)	39 (27, 51)	28 (17, 40)	38 (26, 51)
Specificity, % (95% CI)	96 (94, 99)	98 (95, 99)	95 (92, 98)
PPV, % (95% CI)	77 (62, 92)	81 (59, 93)	72 (56, 87)
NPV, % (95% CI)	84 (79, 89)	81 (76, 86)	83 (78, 88)

Abbreviations: CI = confidence interval, PPV = positive predictive value, NPV = negative predictive value

In exploratory analyses, there were numerical trends towards more true positive results among patients with total Gleason score of 8 or higher and among patients with tumor stage of T2c or higher relative to those patients with lower Gleason score or tumor stage.

CONDOR

CONDOR enrolled 208 patients with biochemical evidence of recurrent prostate cancer, defined by serum PSA of at least 0.2 ng/mL after radical prostatectomy (with confirmatory PSA level also at least 0.2 ng/mL) or by an increase in serum PSA of at least 2 ng/mL above the nadir after other therapies. The mean age was 68 years (range 43 to 91 years), and 90% of patients were white. The median serum PSA was 0.82 ng/mL. Prior treatment included radical prostatectomy in 85% of the patients.

All enrolled patients had conventional imaging evaluation (for most patients, CT or MRI) within 60 days prior to receiving PYLARIFY PET, and this evaluation was negative or equivocal for prostate cancer. All patients received a single PYLARIFY PET/CT from mid-thigh to skull vertex with optional imaging of the lower extremities.

Three central readers independently evaluated each PYLARIFY PET scan for the presence and location of positive lesions. Location of each lesion was categorized in one of 19 subregions that were grouped into 5 regions (prostate/prostate bed, pelvic lymph nodes, other lymph nodes, soft tissue, bone). The readers were blinded to all clinical information.

Depending on the reader, a total of 123 to 137 patients (59% to 66%) had at least one lesion that was identified as PYLARIFY PET-positive (Table 6, TP + FP + PET-Positive Without Reference Standard). The region most commonly observed to have a PYLARIFY PET-positive finding was pelvic lymph nodes (40% to 42% of all PET-positive regions) and the least common region was soft tissue (6% to 7%).

Depending on the reader, 99 to 104 patients with a PYLARIFY PET-positive region had location-matched composite reference standard information available (Evaluable Set, Table 6, TP + FP) that consisted of histopathology, imaging (CT, MRI, ultrasound, fluciclovine PET, choline PET, or bone scan) obtained within 60 days of the PYLARIFY PET scan, or response of serum PSA level to targeted radiotherapy. Reference standard information for PET-negative regions was not systematically collected in this study.

Table 6 shows patient-level performance results of PYLARIFY PET by reader, including location-matched positive predictive value [true positive / (true positive + false positive)], also known as Correct Localization Rate (CLR). For these results, a patient was considered true positive if they had at least one matching location positive on both PYLARIFY PET and the composite reference standard. In addition to calculating location-matched positive predictive value in the Evaluable Set (CLR), an exploratory analysis of positive predictive value in all scanned patients (Imputed CLR) was performed in which PYLARIFY PET-positive patients who lacked reference standard information were imputed using an estimated likelihood that at least one PET-positive lesion was reference standard positive, based on patient-specific factors.

Table 6. Patient-Level Performance of PYLARIFY PET in CONDOR (n=208)

	Reader 1	Reader 2	Reader 3
True Positive (TP)	89	87	84
False Positive (FP)	15	13	15
PET-Positive Without Reference Standard	33	24	24
PET-Negative	71	84	85
CLR % (95% CI)	86 (79, 92)	87 (80, 94)	85 (78, 92)
Imputed CLR % (95% CI)	78 (71, 85)	81 (74, 88)	79 (72, 86)

Abbreviations: TP = true positive, FP = false positive, CLR = location-matched positive predictive value in the Evaluable Set [TP/(TP + FP)], Imputed CLR = location-matched positive predictive value in all scanned patients using an imputation approach based on patient-specific factors for PET-Positive Without Reference Standard, CI = confidence interval

An exploratory analysis of region-level positive predictive value using only PET-positive regions that had sufficient composite reference standard information to determine true positive or false positive status demonstrated results of 67% to 70% with the lower bound of the 95% confidence interval ranging from 59% to 63%.

The percentage of patients categorized as true positive in a location-matched analysis out of all patients scanned with PYLARIFY was an additional exploratory endpoint. Using the same imputation approach for PET-positive patients who lacked reference standard information as in Table 6 above, this value was 47% to 51%, with the lower bound of the 95% confidence interval ranging from 40% to 45%.

Table 7 shows patient-level PYLARIFY PET results from the majority read stratified by serum PSA level. Percent PET positivity was calculated as the proportion of patients with a positive PYLARIFY PET out of all patients scanned. Percent PET positivity includes patients determined to be either true positive or false positive as well as those in whom such determination was not made due to lack of composite reference standard information. The likelihood of a patient having at least one PYLARIFY PET-positive lesion generally increased with higher serum PSA level.

Table 7: Patient-Level PYLARIFY PET Results and Percent PET Positivity* Stratified by Serum PSA Level in the CONDOR Study Using Majority Result Among Three Readers (n=199)**

PSA (ng/mL)		PET positive patients		PET negative patients	Percent PET positivity, (95% CI)
	Total	TP	FP	Without reference standard	
<0.5	24	11	4	9	45
		15			
≥ 0.5 and <1	18	12	3	3	18
		15			
≥ 1 and <2	21	15	3	3	10
		18			
≥ 2	57	50	3	4	6
		53			
Total	120	88	13	19	79
		101			

* Percent PET positivity = PET positive patients/total patients scanned. PET positive patients include true positive and false positive patients as well as those who did not have reference standard information.

** Six patients were excluded from this table due to lack of baseline PSA level. Three patients were excluded from this table due to lack of majority result among the categories true positive, false positive, PET positive without reference standard, and PET negative.

Abbreviations: TP = true positive, FP = false positive, CI = confidence interval

16 HOW SUPPLIED/STORAGE AND HANDLING

16.1 How Supplied

PYLARIFY injection is supplied in a 50 mL multiple-dose glass vial (NDC# 71258-022-01) containing a clear, colorless solution at a strength of 37 MBq/mL to 2,960 MBq/mL (1 mCi/mL to 80 mCi/mL) piflufolastat F 18 at calibration time and date.

16.2 Storage and Handling

Storage

Store PYLARIFY at controlled room temperature (USP) 20°C to 25°C (68°F to 77°F). PYLARIFY does not contain a preservative. Store PYLARIFY in the original container with radiation shielding. The expiration date and time are provided on the container label. Use PYLARIFY within 10 hours from the time of end of synthesis

Handling

This preparation is approved for use by persons under license by the Nuclear Regulatory Commission or the relevant regulatory authority of an Agreement State.

17 PATIENT COUNSELING INFORMATION

Adequate Hydration

Instruct patients to drink a sufficient amount of water to ensure adequate hydration before their PET study and urge them to drink and urinate as often as possible during the first hours following the administration of PYLARIFY, in order to reduce radiation exposure [see *Dosage and Administration (2.3) and Warnings and Precautions (5.3)*].

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Patent: <http://www.lantheus.com/patents/index.html>

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