Clinical Policy: Sargramostim (Leukine)

Reference Number: CP.PHAR.295
Effective Date: 12.01.16
Last Review Date: 08.25
Line of Business: Commercial, HIM, Medicaid

Coding Implications
Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description

Sargramostim (Leukine®) is a recombinant human granulocyte-macrophage colony stimulating factor (GM-CSF).

FDA Approved Indication(s)

Leukine is indicated:

- To shorten time to neutrophil recovery and to reduce the incidence of severe and life-threatening infections and infections resulting in death following induction chemotherapy in adult patients 55 years and older with acute myeloid leukemia (AML);
- For the mobilization of hematopoietic progenitor cells into peripheral blood for collection by leukapheresis and autologous transplantation in adult patients with cancer;
- For the acceleration of myeloid reconstitution following autologous peripheral blood progenitor cell (PBPC) or bone marrow transplantation in adult and pediatric patients 2 years of age and older with non-Hodgkin's lymphoma (NHL), acute lymphoblastic leukemia (ALL) and Hodgkin's lymphoma (HL);
- For the acceleration of myeloid reconstitution following allogeneic bone marrow transplantation from HLA-matched related donors in adult and pediatric patients 2 years of age and older;
- For treatment of delayed neutrophil recovery or graft failure after autologous or allogeneic bone marrow transplantation in adult and pediatric patients 2 years of age and older;
- To increase survival in adult and pediatric patients from birth to 17 years of age acutely exposed to myelosuppressive doses of radiation (Hematopoietic Syndrome of Acute Radiation Syndrome [H-ARS]).

Policy/Criteria

Provider must submit documentation (such as office chart notes, lab results or other clinical information) supporting that member has met all approval criteria.

It is the policy of health plans affiliated with Centene Corporation® that Leukine is **medically necessary** when the following criteria are met:

I. Initial Approval Criteria

A. Acute Myelogenous Leukemia (must meet all)**:**

1. Diagnosis of AML;
2. Prescribed for use following induction therapy for AML;
3. Age ≥ 55 years;

4. Member meets one of the following (a or b):*
   **For Illinois HIM requests, the step therapy requirements below do not apply as of 1/1/2026 per IL HB 5395.*
   a. Request is for treatment associated with cancer for a State with regulations against step therapy in certain oncology settings *(see Appendix E)*;
   b. Failure of Zarxio®, unless contraindicated or clinically significant adverse effects are experienced;
      **Prior authorization may be required for Zarxio*
5. Leukine will not be prescribed concurrently with other colony stimulating factors (e.g., filgrastim, pegfilgrastim) within any chemotherapy cycle;
6. Dose does not exceed 250 mcg/m^2 IV daily.

Approval duration:
Medicaid/HIM – 6 months
Commercial – 6 months or to the member's renewal date, whichever is longer

B. Peripheral Blood Progenitor Cell Collection and Transplantation (must meet all)**:**
1. Prescribed for one of the following (a or b):
   a. Mobilization of hematopoietic progenitor cells into peripheral blood for collection by leukapheresis and autologous transplantation;
   b. Following autologous PBPC transplantation in members with NHL, ALL, HL for acceleration of myeloid reconstitution;
2. Age ≥ 2 years;
3. Member meets one of the following (a or b):*
   **For Illinois HIM requests, the step therapy requirements below do not apply as of 1/1/2026 per IL HB 5395.*
   a. Request is for treatment associated with cancer for a State with regulations against step therapy in certain oncology settings *(see Appendix E)*;
   b. Failure of Zarxio, unless contraindicated or clinically significant adverse effects are experienced;
      **Prior authorization may be required for Zarxio*
4. Leukine will not be prescribed concurrently with other colony stimulating factors (e.g., filgrastim, pegfilgrastim) within any chemotherapy cycle;
5. Dose does not exceed 250 mcg/m^2 IV or SC daily.

Approval duration:
Medicaid/HIM – 6 months
Commercial – 6 months or to the member's renewal date, whichever is longer

C. Bone Marrow Transplantation (must meet all):
1. Prescribed for use in one of the following settings (a, b, or c):
   a. Following autologous BMT in members with NHL, ALL, or HL for acceleration of myeloid reconstitution;
   b. Following allogeneic BMT for acceleration of myeloid reconstitution;
   c. Following BMT where engraftment is delayed or has failed;
2. Age ≥ 2 years;
3. Leukine will not be prescribed concurrently with other colony stimulating factors (e.g., filgrastim, pegfilgrastim) within any chemotherapy cycle;

4. Member meets one of the following (a or b):*
   **For Illinois HIM requests, the step therapy requirements below do not apply as of 1/1/2026 per IL HB 5395.*
   a. Request is for treatment associated with cancer for a State with regulations against step therapy in certain oncology settings *(see Appendix E)*;
   b. Failure of Zarxio, unless contraindicated or clinically significant adverse effects are experienced;
      **Prior authorization may be required for Zarxio*
5. Dose does not exceed 500 mcg/m^2 IV daily.

Approval duration:
Medicaid/HIM – 6 months
Commercial – 6 months or to the member's renewal date, whichever is longer

D. Acute Radiation Syndrome (must meet all)**:**
1. Prescribed for use following suspected or confirmed acute exposure to myelosuppressive doses of radiation;
2. Member meets one of the following (a or b):*
   **For Illinois HIM requests, the step therapy requirements below do not apply as of 1/1/2026 per IL HB 5395.*
   a. Request is for treatment associated with cancer for a State with regulations against step therapy in certain oncology settings *(see Appendix E)*;
   b. Failure of Zarxio, unless contraindicated or clinically significant adverse effects are experienced;
      **Prior authorization may be required for Zarxio*
3. Leukine will not be prescribed concurrently with other colony stimulating factors (e.g., filgrastim, pegfilgrastim) within any chemotherapy cycle;
4. Documentation of member's current weight (in kg);
5. Dose does not exceed one of the following (a, b, or c):
   a. Weight <15 kg: 12 mcg/kg SC daily;
   b. Weight 15 kg to 40 kg: 10 mcg/kg SC daily;
   c. Weight > 40 kg: 7 mcg/kg SC daily.

Approval duration:
Medicaid/HIM – 6 months
Commercial – 6 months or to the member's renewal date, whichever is longer

E. Neuroblastoma (off-label) (must meet all)**:**
1. Diagnosis of high-risk neuroblastoma;
2. Prescribed by or in consultation with an oncologist;
3. One of the following (a or b):
   a. Prescribed in combination with Danyelza®*, temozolomide*, and irinotecan*;
   b. Prescribed in combination with Unituxin®* and one of the following (i or ii):
      i. Temozolomide* and irinotecan*;
      ii. Isotretinoin*;
      **Prior authorization may be required*
4. Request meets one of the following (a or b):*
   a. Dose does not exceed both of the following for each treatment cycle (i and ii):
      i. 250 mcg/m^2 SC daily for 5 doses prior to day 1 of Danyelza administration;

ii. 500 mcg/m^2 SC daily for 5 doses in combination with Danyelza;

b. Dose is supported by practice guidelines or peer-reviewed literature for the relevant off-label use (*prescriber must submit supporting evidence*).

**Prescribed regimen must be FDA-approved or recommended by NCCN*

Medicaid/HIM – 6 months
Commercial – 6 months or to the member's renewal date, whichever is longer

F. Chemotherapy-Induced Febrile Neutropenia (off-label) (must meet all)**:**

1. Prescribed for the treatment of chemotherapy-induced febrile neutropenia;
2. Prescribed by or in consultation with an oncologist;
3. Member has not received prophylactic granulocyte colony-stimulating factors (e.g., filgrastim, pegfilgrastim);
4. Member has at least one risk factor for infection-related complications (e.g., sepsis syndrome, age > 65 years, absolute neutrophil count [ANC] < 100/mcL, neutropenia expected to be > 10 days in duration, pneumonia or other clinically documented infections, invasive fungal infection, hospitalization at the time of fever, and prior episode of febrile neutropenia);
5. Member meets one of the following (a or b):*
   **For Illinois HIM requests, the step therapy requirements below do not apply as of 1/1/2026 per IL HB 5395.*
   a. Request is for treatment associated with cancer for a State with regulations against step therapy in certain oncology settings *(see Appendix E*);
   b. Failure of Zarxio, unless contraindicated or clinically significant adverse effects are experienced;
      **Prior authorization may be required for Zarxio*
6. Leukine will not be prescribed concurrently with other colony stimulating factors (e.g., filgrastim, pegfilgrastim) within any chemotherapy cycle;
7. Request meets one of the following (a or b):*
   a. Dose does not exceed 250 mcg/m^2 IV daily;
   b. Dose is supported by practice guidelines or peer-reviewed literature for the relevant off-label use (*prescriber must submit supporting evidence*).
   **Prescribed regimen must be FDA-approved or recommended by NCCN*

Approval duration:
Medicaid/HIM – 6 months
Commercial – 6 months or to the member's renewal date, whichever is longer

G. Other diagnoses/indications (must meet all):

1. Member meets one of the following (a or b):*
   **For Illinois HIM requests, the step therapy requirements below do not apply as of 1/1/2026 per IL HB 5395.*
   a. Member must use Zarxio, unless contraindicated or clinically significant adverse effects are experienced;*
      **Prior authorization may be required for Zarxio*
   b. Request is for treatment associated with cancer for a State with regulations against step therapy in certain oncology settings *(see Appendix E);*

2. Member meets one of the following (a or b):
   a. If this drug has recently (within the last 6 months) undergone a label change (e.g., newly approved indication, age expansion, new dosing regimen) that is not yet reflected in this policy, refer to one of the following policies (I or ii):
      i. For drugs on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the no coverage criteria policy for the relevant line of business: CP.CPA.190 for commercial, HIM.PA.33 for health insurance marketplace, and CP.PMN.255 for Medicaid; or
      ii. For drugs NOT on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the non-formulary policy for the relevant line of business: CP.CPA.190 for commercial, HIM.PA.103 for health insurance marketplace, and CP.PMN.16 for Medicaid; or
   b. If the requested use (e.g., diagnosis, age, dosing regimen) is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized) AND criterion 2a above does not apply, refer to the off-label use policy for the relevant line of business: CP.CPA.09 for commercial, HIM.PA.154 for health insurance marketplace, and CP.PMN.53 for Medicaid.

II. Continued Therapy

A. All Indications in Section I (must meet all):

1. Member meets one of the following (a or b):
   a. Currently receiving medication via Centene benefit or member has previously met initial approval criteria;
   b. Member is currently receiving medication and is enrolled in a state and product with continuity of care regulations (*refer to state specific addendums for CC.PHARM.03A and CC.PHARM.03B*);
2. Member is responding positively to therapy;
3. Leukine will not be prescribed concurrently with other colony stimulating factors (e.g., filgrastim, pegfilgrastim) within any chemotherapy cycle;
4. If request is for a dose increase, request meets one of the following (a, b, or c):*
   a. New dose does not exceed the FDA-approved maximum recommended dose for the relevant indication in Section V;
   b. For neuroblastoma, new dose does not exceed both of the following for each treatment cycle (i and ii):
      i. 250 mcg/m^2 SC daily for 5 doses prior to day 1 of Danyelza administration;
      ii. 500 mcg/m^2 SC daily for 5 doses in combination with Danyelza;
   c. New dose is supported by practice guidelines or peer-reviewed literature for the relevant off-label use (*prescriber must submit supporting evidence*).

   **Prescribed regimen must be FDA-approved or recommended by NCCN*

Approval duration:
Medicaid/HIM – 6 months
Commercial–- 6 months or to the member's renewal date, whichever is longer

B. Other diagnoses/indications (must meet all):

1. Member meets one of the following (a or b):*

   **For Illinois HIM requests, the step therapy requirements below do not apply as of 1/1/2026 per IL HB 5395.*

a. Member must use Zarxio, unless contraindicated or clinically significant adverse effects are experienced;*
**Prior authorization may be required for Zarxio*
b. Request is for treatment associated with cancer for a State with regulations against step therapy in certain oncology settings *(see Appendix E);*

2. Member meets one of the following (a or b):
   a. If this drug has recently (within the last 6 months) undergone a label change (e.g., newly approved indication, age expansion, new dosing regimen) that is not yet reflected in this policy, refer to one of the following policies (i or ii):
      i. For drugs on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the no coverage criteria policy for the relevant line of business: CP.CPA.190 for commercial, HIM.PA.33 for health insurance marketplace, and CP.PMN.255 for Medicaid; or
      ii. For drugs NOT on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the non-formulary policy for the relevant line of business: CP.CPA.190 for commercial, HIM.PA.103 for health insurance marketplace, and CP.PMN.16 for Medicaid; or
   b. If the requested use (e.g., diagnosis, age, dosing regimen) is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized) AND criterion 2a above does not apply, refer to the off-label use policy for the relevant line of business: CP.CPA.09 for commercial, HIM.PA.154 for health insurance marketplace, and CP.PMN.53 for Medicaid.

III. Diagnoses/Indications for which coverage is NOT authorized:

A. Non-FDA approved indications, which are not addressed in this policy, unless there is sufficient documentation of efficacy and safety according to the off label use policies – CP.CPA.09 for commercial, HIM.PA.154 for health insurance marketplace, and CP.PMN.53 for Medicaid, or evidence of coverage documents.

IV. Appendices/General Information

Appendix A: Abbreviation/Acronym Key

ALL: acute lymphoblastic leukemia
AML: acute myelogenous leukemia
BMT: bone marrow transplantation
FDA: Food and Drug Administration
GM-CSF: granulocyte-macrophage colony stimulating factor
H-ARS: hematopoietic syndrome of acute radiation syndrome
NHL: non-Hodgki''s lymphoma
PBPC: peripheral blood progenitor cell

Appendix B: Therapeutic Alternatives

This table provides a listing of preferred alternative therapy recommended in the approval criteria. The drugs listed here may not be a formulary agent and may require prior authorization.

Drug	Dosing Regimen	Dose Limit/ Maximum Dose
Zarxio (filgrastim-sndz),	AML: 5 mcg/kg SC or IV QD	AML:

Drug	Dosing Regimen	Dose Limit/ Maximum Dose
	BMT: 10 mcg/kg IV or SC infusion QD PBPC collection: 10 mcg/kg SC bolus or continuous infusion QD Acute Radiation Syndrome: 10 mcg/kg SC QD	30 mcg/kg/day [IV] or 24 mcg/kg/day [SC] BMT, PBPC collection, Acute Radiation Syndrome: 10 mcg/kg/day

Therapeutic alternatives are listed as Brand name® (generic) when the drug is available by brand name only and generic (Brand name®) when the drug is available by both brand and generic.

Appendix C: Contraindications/Boxed Warnings

- Contraindication(s): history of serious allergic reactions, including anaphylaxis, to human GM-CSF such as sargramostim, yeast-derived products, or any component of the product
- Boxed warning(s): none reported

Appendix D: General Information

- Because of potential sensitivity of rapidly dividing hematopoietic progenitor cells, Leukine should not be administered simultaneously with cytotoxic chemotherapy or radiotherapy or within 24 hours preceding or following chemotherapy or radiotherapy.
- Use Leukine with caution in patients with pre-existing fluid retention, pulmonary infiltrates, or congestive heart failure.

Appendix E: States with Regulations against Redirections in Cancer

State	Step Therapy Prohibited?	Notes
FL	Yes	For stage 4 metastatic cancer and associated conditions.
GA	Yes	For stage 4 metastatic cancer. Redirection does not refer to review of medical necessity or clinical appropriateness.
IA	Yes	For standard of care stage 4 cancer drug use, supported by peer-reviewed, evidence-based literature, and approved by FDA.
LA	Yes≠	For stage 4 advanced, metastatic cancer or associated conditions. ≠Exception if clinically equivalent therapy, contains identical active ingredient(s), and proven to have same efficacy
MS	Yes	**Applies to HIM requests only** For advanced metastatic cancer and associated conditions
NV	Yes	Stage 3 and stage 4 cancer patients for a prescription drug to treat the cancer or any symptom thereof of the covered person
OH	Yes	**Applies to Commercial and HIM requests only** For stage 4 metastatic cancer and associated conditions
OK	Yes	**Applies to HIM requests only** For advanced metastatic cancer and associated conditions

State	Step Therapy Prohibited?	Notes
PA	Yes	For stage 4 advanced, metastatic cancer
TN	Yes^	For stage 4 advanced metastatic cancer, metastatic blood cancer, and associated conditions ^Exception if step therapy is for AB-rated generic equivalent, interchangeable biological product, or biosimilar product to the equivalent brand drug
TX	Yes	For stage 4 advanced, metastatic cancer and associated conditions

V. Dosage and Administration

Indication	Dosing Regimen	Maximum Dose
AML	250 mcg/m^2/day IV over a 4 hour period approximately on day 11 or four days following the completion of induction chemotherapy	250 mcg/m^2 IV daily
PBPC collection and transplantation	250 mcg/m^2/day administered IV over 24 hours or SC once daily	250 mcg/m^2 IV or SC daily
Myeloid reconstitution after autologous or allogeneic BMT	250 mcg/m^2/day IV over a 2 hour period beginning two to four hours after bone marrow infusion, and not less than 24 hours after the last dose of chemotherapy or radiotherapy	500 mcg/m^2 IV daily
BMT failure or engraftment delay	250 mcg/m^2/day for 14 days as a 2 hour IV infusion	500 mcg/m^2 IV daily
Acute radiation syndrome	Weight-based dose SC QD: > 40 kg: 7 mcg/kg 15 to 40 kg: 10 mcg/kg < 15 kg: 12 mcg/kg	See dosing regimen

VI. Product Availability

Lyophilized powder: 250 mcg single-dose vial

VII. References

1. Leukine Prescribing Information. Bridgewater, NJ: Sanofi-Aventis U.S., LLC.; August 2023. Available at: https://www.leukine.com/#. Accessed April 14, 2025.
2. National Comprehensive Cancer Network: Hematopoietic Growth Factors Version 1.2025. Available at: https://www.nccn.org/professionals/physician_gls/pdf/growthfactors.pdf. Accessed: May 15, 2025.
3. National Comprehensive Cancer Network Drugs and Biologics Compendium. Available at: http://www.nccn.org/professionals/drug_compendium. Accessed May 15, 2025.
4. DRUGDEX® System [Internet database]. Greenwood Village, Colo: Thomson Healthcare. Updated periodically. Accessed May 15, 2025.
5. National Comprehensive Cancer Network. Hematopoietic Cell Transplantation (HCT) 1.2025. Available at: https://www.nccn.org/professionals/physician_gls/pdf/hct.pdf. Accessed May 15, 2025.

6. National Comprehensive Cancer Network. Neuroblastoma 1.2025. Available at: https://www.nccn.org/professionals/physician_gls/pdf/neuroblastoma.pdf. Accessed May 15, 2025.

Coding Implications
Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

HCPCS Codes	Description
J2820	Injection, sargramostim (GM-CSF), 50 mcg

Reviews, Revisions, and Approvals	Date	P&T Approval Date
3Q 2021 annual review: no significant changes; allowed by-passing of redirection if state regulations do not allow step therapy in Stage IV or metastatic cancer settings for AML; modified HIM.PHAR.21 to HIM.PA.154; references reviewed and updated.	04.05.21	08.21
Added Nevada to Appendix E.	08.03.21	
3Q 2022 annual review: removed general description of "stage IV or metastatic" cancer for states with regulations against redirections; applied redirection bypass for State with regulations against step therapy to all indications; added requirement that Leukine will not be prescribed concurrently with other colony stimulating factors (e.g., filgrastim, pegfilgrastim) within any chemotherapy cycle; references reviewed and updated.	04.20.22	08.22
Template changes applied to other diagnoses/indications and continued therapy section.	09.23.22	
3Q 2023 annual review: no significant changes; removed 500 mcg/mL solution from product availability per prescribing information; references reviewed and updated; updated Appendix E to include Oklahoma.	04.18.23	08.23
Added off-label indication for relapsed or refractory high-risk neuroblastoma in combination with Danyelza (which is FDA-approved for this use).	10.16.23	
Updated Appendix E to include Mississippi.	06.05.24	
3Q 2024 annual review: per NCCN Compendium for high-risk neuroblastoma added additional supported combination therapies; added NCCN Compendium supported off-label use in the treatment of chemotherapy-induced febrile neutropenia; revised dosing requirements to allow guideline or NCCN supported off-label dosing; for acute radiation syndrome to confirm weight-based dosing added requirement for documentation of member's current weight (in kg); references reviewed and updated.	05.03.24	08.24

Reviews, Revisions, and Approvals	Date	P&T Approval Date
3Q 2025 annual review: per NCCN Compendium for neuroblastoma removed requirement for relapse or refractory disease, clarified combination with Danyelza should also include temozolomide and irinotecan; added step therapy bypass for IL HIM per IL HB 5395; updated Appendix E with revised language and exception for Tennessee; references reviewed and updated.	04.14.25	08.25

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. "Health Plan" means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan's affiliates, as applicable.

The purpose of this clinical policy is to provide a guide to medical necessity, which is a component of the guidelines used to assist in making coverage decisions and administering benefits. It does not constitute a contract or guarantee regarding payment or results. Coverage decisions and the administration of benefits are subject to all terms, conditions, exclusions, and limitations of the coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of insurance, etc.), as well as to state and federal requirements and applicable Health Plan-level administrative policies and procedures.

This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

This clinical policy does not constitute medical advice, medical treatment, or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members. This clinical policy is not intended to recommend treatment for members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

Providers referred to in this clinical policy are independent contractors who exercise independent judgment and over whom the Health Plan has no control or right of control. Providers are not agents or employees of the Health Plan.

This clinical policy is the property of the Health Plan. Unauthorized copying, use, and distribution of this clinical policy or any information contained herein are strictly prohibited. Providers, members, and their representatives are bound to the terms and conditions expressed herein through the terms of their contracts. Where no such contract exists, providers, members and their representatives agree to be bound by such terms and conditions by providing services to members and/or submitting claims for payment for such services.

Note: For Medicaid members, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.