

## **Clinical Policy: Lovotibeglogene Autotemcel (Lyfgenia)**

Reference Number: IL.PHAR.627

Effective Date: 1.1.26

Last Review Date: 1.2.26

Line of Business: Medicaid

[Coding Implications](#)  
[Revision Log](#)

See [Important Reminder](#) at the end of this policy for important regulatory and legal information.

### **Description**

Lovotibeglogene autotemcel (Lyfgenia<sup>®</sup>) is an autologous hematopoietic stem cell-based gene therapy.

### **FDA Approved Indication(s)**

Lyfgenia is indicated for the treatment of patients 12 years of age or older with sickle cell disease (SCD) and a history of vaso-occlusive events (VOEs).

Limitation(s) of use: Following treatment with Lyfgenia, patients with  $\alpha$ -thalassemia trait ( $-\alpha 3.7/-\alpha 3.7$ ) may experience anemia with erythroid dysplasia that may require chronic red blood cell transfusions. Lyfgenia has not been studied in patients with more than two  $\alpha$ -globin gene deletions.

### **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.*

All requests reviewed under this policy **require Precision Drug Action Committee (PDAC) Utilization Management Review**. Refer to CC.PHAR.21 for process details.

It is the policy of health plans affiliated with Centene Corporation<sup>®</sup> that Lyfgenia is **medically necessary** when the following criteria are met:

#### **I. Initial Approval Criteria**

##### **A. Sickle Cell Disease (must meet all):**

1. Diagnosis of sickle cell disease (SCD).
2. Genetic testing confirming sickle cell disease
3. Age greater than or equal to 12 years old at the time of gene therapy administration.
4. Provider attestation of one of the following (a OR b):
  - a. Greater than or equal to 4 vaso-occlusive events (VOE) in the past 24 months while receiving appropriate standard of care treatment for SCD.
  - b. Individual is currently receiving chronic transfusion therapy for recurrent vaso-occlusive events

5. Failure, or intolerance to hydroxyurea (defined as being unable to take hydroxyurea per health care professional judgement) at any point in the past.
6. Prescriber attestation that participant is clinically stable and eligible to undergo hematopoietic stem cell transplantation (HSCT)
7. Medication is prescribed by or in consultation with a board-certified hematologist or transplant specialist with experience in the treatment of patients with SCD.
8. Dose contains a minimum of  $3 \times 10^6$  CD34+ cells/kg

**Approval duration: 12 months (one-time infusion per lifetime)**

**B. Other diagnoses/indications (must meet 1 or 2):**

1. 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 (a or b):
  - a. For drugs on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the no coverage criteria policy for the relevant line of business: CP.PMN.255 for Medicaid; or
  - b. For drugs NOT on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the non-formulary policy for the relevant line of business: and CP.PMN.16 for Medicaid; or
2. 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 1 above does not apply, refer to the off-label use policy for the relevant line of business: CP.PMN.53 for Medicaid.

## **II. Continued Therapy**

### **A. Sickle Cell Disease**

1. Continued therapy will not be authorized as Lyfgenia is indicated to be dosed one time only.

**Approval duration: Not applicable**

### **B. Other diagnoses/indications (must meet 1 or 2):**

1. 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 (a or b):
  - a. For drugs on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the no coverage criteria policy for the relevant line of business: CP.PMN.255 for Medicaid; or
  - b. For drugs NOT on the formulary (commercial, health insurance marketplace) or PDL (Medicaid), the non-formulary policy for the relevant line of business: CP.PMN.16 for Medicaid; or
2. 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 1 above does not apply, refer to the off-label use policy for the relevant line of business: 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*

ACS: acute chest syndrome  
ANC: absolute neutrophil count  
CIBMTR: Center for International Blood and Marrow Transplant Research  
CBC: complete blood count  
FDA: Food and Drug Administration  
HbF: fetal hemoglobin  
HIV: human immunodeficiency virus

HSCT: hematopoietic stem cell transplantation  
MCV: mean corpuscular volume  
NHLBI: National Heart, Lung, and Blood Institute  
SCD: sickle cell disease  
ULN: upper limit of normal  
VOE: vaso-occlusive event  
WBC: white blood 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 for all relevant lines of business and may require prior authorization.*

<b>Drug Name</b>	<b>Dosing Regimen</b>	<b>Dose Limit/ Maximum Dose</b>
hydroxyurea <sup>†</sup>	<p><u>Age ≥ 18 years</u>                      Initial: 15 mg/kg/dose PO once daily, rounded to the nearest 500-mg increment*</p> <p><u>Age 9 months to 17 years</u>                      Initial: 20 mg/kg/dose PO once daily*</p> <p><i>* Increase by 5 mg/kg/day every 8 weeks until mild myelosuppression (ANC 2,000 to 4,000/microliter) achieved.</i></p>	35 mg/kg/day
Droxia <sup>®</sup> (hydroxyurea)	<p><u>Age ≥ 18 years</u>                      Initial: 15 mg/kg/day PO single dose; based on blood counts, may increase by 5 mg/kg/day every 12 weeks to a max 35 mg/kg/day</p>	
Siklos <sup>®</sup> (hydroxyurea)	<p><u>Age ≥ 18 years</u>                      Initial: 15 mg/kg PO QD*</p> <p><u>Age 2 years to 17 years</u>                      Initial: 20 mg/kg PO QD*</p> <p><i>*Based on blood counts, may increase by 5 mg/kg/day every 8 weeks or if a painful crisis occurs</i></p>	

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

*<sup>†</sup> Off-label, 2014 NHLBI SCD guideline-supported dosing regimen*

*Appendix C: Contraindications/Boxed Warnings*

- Contraindication(s): none reported
- Boxed warning(s): hematologic malignancy

*Appendix D: General Information*

- The eligibility criteria related to beta hemoglobin genotype for the pivotal HGB-206 Group C clinical trial included  $\beta^S/\beta^S$ ,  $\beta^S/\beta^0$ , or  $\beta^S/\beta^+$ . However, upon enrollment and endpoint analysis, all study participants had confirmed  $\beta^S/\beta^S$  genotype. No study participants in the pivotal trial had the  $\beta^S/\beta^0$  or  $\beta^S/\beta^+$  genotype. Therefore, a confirmed  $\beta^S/\beta^S$  genotype is one of the criteria for Lyfgenia coverage to reflect the final study population evaluated in the clinical trial.
- Hydroxyurea dose titration: Members should obtain complete blood counts (CBC) with white blood cell (WBC) differential and reticulocyte counts at least every 4 weeks for titration. The following lab values indicate that it is safe to increase dose.
  - Absolute neutrophil count (ANC) in adults  $\geq 2,000/\mu\text{L}$ , or ANC  $\geq 1,250/\mu\text{L}$  in younger patients with lower baseline counts

## CLINICAL POLICY

### Lovotibeglogene Autotemcel

- Platelet count  $\geq 80,000/\mu\text{L}$
- If neutropenia or thrombocytopenia occurs: hydroxyurea dosing is held, CBC and WBC differential are monitored weekly, and members can restart hydroxyurea when values have recovered.

#### *Appendix E: Advanced Liver Disease*

- Examples of advanced liver disease include, but are not limited to, the following:
  - Cirrhosis
  - Bridging or significant fibrosis
  - Active hepatitis
  - Persistent aspartate transaminase, alanine transaminase, or direct bilirubin value  $> 3x$  the upper limit of normal (ULN)
  - Baseline prothrombin time or partial thromboplastin time  $> 1.5x$  ULN

#### V. Dosage and Administration

Indication	Dosing Regimen	Maximum Dose
SCD	Minimum recommended dose: $3 \times 10^6$ CD34+ cells/kg of body weight IV	Not applicable

#### VI. Product Availability

Single-dose cell suspension: one to four infusion bags which contain  $1.7$  to  $20 \times 10^6$  cells/mL suspended in cryopreservation solution

#### VII. References

1. Lyfgenia Prescribing Information. Somerville, MA: Bluebird Bio, Inc.; December 2023. Available at: <https://www.bluebirdbio.com>. Accessed November 18, 2024.
2. ClinicalTrials.gov. A Study Evaluating the Safety and Efficacy of bb1111 in Severe Sickle Cell Disease. Last updated August 23, 2023. Available at: <https://clinicaltrials.gov/ct2/show/NCT02140554>. Accessed November 18, 2024.
3. Kanter J, Liem RI, Bernaudin F, et al. American Society of Hematology 2021 guidelines for sickle cell disease: stem cell transplantation. *Blood Adv*. 2021;5(18):3668-3689. doi:10.1182/bloodadvances.2021004394C
4. Kanter J, Walters MC, Krishnamurti L, et al. Biologic and Clinical Efficacy of LentiGlobin for Sickle Cell Disease. *N Engl J Med*. 2022;386(7):617-628. doi:10.1056/NEJMoa2117175
5. Yawn BP, Buchanan GR, Afenyi-Annan AN, et al. Evidence-based management of sickle cell disease: Expert Panel Report, 2014. National Heart, Lung, and Blood Institute (NHLBI). Available at: [https://www.nhlbi.nih.gov/sites/default/files/media/docs/sickle-cell-disease-report%20020816\\_0.pdf](https://www.nhlbi.nih.gov/sites/default/files/media/docs/sickle-cell-disease-report%20020816_0.pdf). Accessed November 18, 2024.
6. Clinical Pharmacology [database online]. Philadelphia, PA: Elsevier. Updated periodically. Available at: <http://www.clinicalkey.com/pharmacology>. Accessed November 18, 2024.

#### 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
J3394	Injection, lovotibeglogene autotemcel, per treatment

Reviews, Revisions, and Approvals	Date	P&T Approval Date
Policy created to comply with HFS criteria	1.2.26	

**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.

**CLINICAL POLICY**  
Lovotibeglogene Autotemcel

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.

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