PHARMACY POLICY STATEMENT
Marketplace

DRUG NAME	Lyfgenia (lovotibeglogene autotemcel)
BENEFIT TYPE	Medical
STATUS	Prior Authorization Required

Lyfgenia, initially approved by the FDA in 2023, is an autologous hematopoietic stem cell-based gene therapy indicated for the treatment of patients 12 years of age or older with sickle cell disease and a history of vaso-occlusive crises (VOCs). After Lyfgenia infusion, the transduced CD34+ hematopoietic stem cells (HSCs) engraft in the bone marrow and differentiate to produce red blood cells containing biologically active βA-T87Q-globin that will combine with α-globin to produce functional Hb containing βA-T87Q-globin (HbAT87Q). HbAT87Q has similar oxygen-binding affinity and oxygen hemoglobin dissociation curve to wild type HbA, reduces intracellular and total hemoglobin S (HbS) levels, and is designed to sterically inhibit polymerization of HbS thereby limiting the sickling of red blood cells.
SCD is caused by an inherited mutation in the beta globin gene, resulting in abnormal hemoglobin called sickle hemoglobin (HbS). Red blood cells become rigid, undergo premature hemolysis leading to anemia, and become unable to transport oxygen to critical organs. Patients experience severe pain from vaso-occlusive crises. First line therapy for sickle cell disease is hydroxyurea.

Lyfgenia (lovotibeglogene autotemcel) will be considered for coverage when the following criteria are met:

Sickle Cell Disease (SCD)

For **initial** authorization:
1. Member is at least 12 years of age; AND
2. Medication must be prescribed by or in consultation with a hematologist; AND
3. Member has a diagnosis of severe sickle cell disease with genotype *βS/βS* or *βS/β0*; AND
4. Member has had at least **FOUR** severe VOCs within the past two years (ex. 24-hour hospital stay or emergency department (ED) visit, at least two visits to a hospital or ED over a 72-hour period, with both visits requiring intravenous treatment, VOCs of priapism requiring any level of medical treatment); AND
5. Member has screening completed or scheduled for HIV-1, HIV-2, hepatitis B and hepatitis C; AND
6. Member has had a 6-month trial of hydroxyurea without relief from VOCs; AND
7. Therapy with disease modifying therapies for sickle cell disease (hydroxyurea, crizanlizumab, voxelotor, etc) will be discontinued prior to Lyfgenia infusion; AND
8. Member does **NOT** have any of the following:
   a) A willing matched donor for a hematopoietic stem cell transplant (HSCT);
   b) Prior HSCT;
   c) Advanced liver disease;
   d) Prior use of gene therapy.
9. **Dosage allowed/Quantity limit:** the minimum recommended dose is 3×10^6 $CD34^+$ cells/kg as a single infusion.

If all the above requirements are met, the medication will be approved for 3 months.

For **reauthorization**:
1. Lyfgenia is a one-time infusion and will not be reauthorized.

CareSource considers Lyfgenia (lovotibeglogene autotemcel) not medically necessary for the treatment of conditions that are not listed in this document. For any other indication, please refer to the Off-Label policy.

DATE	ACTION/DESCRIPTION
12/18/2023	New policy for Lyfgenia created.

References:

1. Lyfgenia [prescribing information]. Somerville, MA: Bluebird bio, Inc.; 2023
2. 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
3. Yawn BP, Buchanan GR, Afenyi-Annan AN, et al. Management of sickle cell disease: summary of the 2014 evidence-based report by expert panel members [published correction appears in JAMA. 2014 Nov 12;312(18):1932] [published correction appears in JAMA. 2015 Feb 17;313(7):729]. *JAMA*. 2014;312(10):1033-1048. doi:10.1001/jama.2014.10517
4. 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
5. Kanter J, Thompson AA, Pierciey FJ Jr, et al. Lovo-cel gene therapy for sickle cell disease: Treatment process evolution and outcomes in the initial groups of the HGB-206 study. *Am J Hematol.* 2023;98(1):11-22. doi:10.1002/ajh.26741
6. Institute for Clinical and Economic Review (ICER). Exa-cel and Lovo-cel: Final Policy Recommendations. August 2023.
7. Institute for Clinical and Economic Review (ICER). Gene Therapies for Sickle Cell Disease: Effectiveness and Value. August 2023.
8. IPD Analytics. Accessed December 15, 2023.

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