

Clinical Policy: Heart-Lung Transplant

Reference Number: CP.MP.132

Date of Last Revision: 02/24

[Coding Implications](#)

[Revision Log](#)

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

Description

Heart-lung transplantation is the treatment of choice for patients with both end-stage heart and end-stage lung disease. This policy establishes the medical necessity requirements for heart-lung transplants.

Policy/Criteria

- I. It is the policy of health plans affiliated with Centene Corporation[®] that heart-lung transplant is **medically necessary** for members/enrollees who meet all of the following criteria:
 - A. End-stage heart and end-stage lung disease due to one of the following:
 1. Age > 18 years and any of the following:
 - a. Irreversible primary pulmonary hypertension with heart failure;
 - b. Nonspecific severe pulmonary fibrosis;
 - c. Eisenmenger syndrome with irreversible pulmonary hypertension and heart failure;
 - d. Cystic fibrosis with severe heart failure;
 - e. Chronic obstructive pulmonary disease with heart failure;
 - f. Emphysema with severe heart failure;
 - g. Pulmonary fibrosis with uncontrollable pulmonary hypertension or heart failure;
 - h. Non-complex congenital heart disease associated with pulmonary hypertension that is not amenable to lung transplantation and repair by standard surgery;
 - i. Severe coronary artery disease or cardiomyopathy with irreversible pulmonary hypertension;
 - j. Right ventricular failure with objective evidence of right ventricular fibrosis or infarction or refractory left ventricular failure;
 2. Age ≤ 18 years and any of the following:
 - a. Eisenmenger syndrome;
 - b. Heart re-transplant;
 - c. Lung re-transplant;
 - d. Alveolar proteinosis;
 - e. Primary pulmonary hypertension;
 - f. Pulmonary vascular disease;
 - g. Restrictive cardiomyopathy;
 - h. Congenital heart disease meeting one of the following:
 - i. Congenital heart disease lesion that has been previously repaired or palliated;
 - ii. Member/enrollee is an infant with a single functional ventricle and one of the following:
 - a) Severe stenosis (stenoses) or atresia in proximal coronary arteries;
 - b) Moderate to severe stenosis and/or insufficiency of the atrioventricular and/or systemic semilunar valve(s);
 - c) Severe ventricular dysfunction;
 - i. Cystic fibrosis with progressive, irreversible cardiac dysfunction;

- j. Dilated cardiomyopathy;
- B. Meets the following disease severity criteria:
- 1. Meets one of the following staging criteria:
 - a. Age > 18 years: New York Heart Association classification of heart failure III or IV (Table 1);
 - b. Age ≤ 18 years: American Heart Association Stage C or Stage D heart disease, (Table 2);
 - 2. Life expectancy in the absence of cardiopulmonary disease ≥ two years;
- C. Does not have any of the following contraindications:
- 1. HIV infection with detectable viral load unless all of the following are noted:
 - a. CD4 cell count >200 cells/mm³,
 - b. Absence of active AIDS-defining opportunistic infection (unless treated efficaciously or prevented, can be included on the heart transplant waiting list) or malignancy;
 - c. Member/enrollee is currently on effective ART (antiretroviral therapy);
 - 2. Inability to adhere to the regimen necessary to preserve the transplant, even with caregiver support;
 - 3. Severe hypoplasia of the central branch pulmonary arteries or pulmonary veins;
 - 4. Current episode of ongoing acute allograft rejection, even in the presence of graft vasculopathy, and retransplantation is requested;
 - 5. Less than 6 months have passed since the primary transplantation and retransplantation is requested;
 - 6. Malignancy with high risk of recurrence or death related to cancer;
 - 7. Acute renal failure with rising creatinine or on dialysis and low likelihood of recovery;
 - 8. Acute liver failure or cirrhosis with portal hypertension or synthetic dysfunction;
 - 9. Stroke, acute coronary syndrome, or myocardial infarction (excluding demand ischemia) within 30 days;
 - 10. Glomerular filtration rate < 30 mL/min/1.73m², unless being considered for multi-organ transplant;
 - 11. Septic shock;
 - 12. Active extrapulmonary or disseminated infection;
 - 13. Active *tuberculosis* infection;
 - 14. Progressive cognitive impairment;
 - 15. Other severe, uncontrolled medical condition expected to limit survival after transplant;
 - 16. Active substance use or dependence (including current tobacco use, vaping, marijuana use (unless prescribed by a licensed practitioner), or intravenous drug use) without convincing evidence of risk reduction behaviors (unless urgent transplant timelines are present, in which case a commitment to reducing behaviors is acceptable). Serial blood and urine testing may be used to verify abstinence from substances that are of concern;
 - a. If there is a history of nicotine or tobacco use, documentation notes abstinence from all tobacco and nicotine products (including nicotine replacement therapy) for ≥ six months prior to transplant;

17. Lung transplantation alone will restore right ventricular function.

Table 1: NYHA Classifications of Heart Failure	
Classification	Characteristics
Class I	Patients with cardiac disease but without the resulting limitations in physical activity. Ordinary activity does not cause undue fatigue, palpitation, dyspnea, or anginal pain.
Class II	Patients with heart disease resulting in slight limitations of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea or anginal pain.
Class III	Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary physical activity causes fatigue, palpitation, dyspnea, or anginal pain.
Class IV	Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. The symptoms of cardiac insufficiency or of the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort increases.

Table 2: Heart Failure Stages in Pediatric Heart Disease	
Classification	Characteristics
A	At high risk for developing heart failure.
B	Abnormal cardiac structure and/or function; no symptoms of heart failure.
C	Abnormal cardiac structure and/or function; Past or present symptoms of heart failure.
D	Abnormal structure and/or function; continuous infusion of intravenous inotropes or prostaglandin E ₁ to maintain of a ductus arteriosus; mechanical ventilatory and/or mechanical circulatory support.

*Note: Heart lung transplantations may be considered medically necessary for other congenital cardiopulmonary anomalies as determined upon individual case review.

Background

Heart-lung transplantation is a strong surgical option for selected patients with simultaneous end-stage heart failure and end-stage lung disease. Complex congenital heart disease with Eisenmenger syndrome is the most common indication for heart-lung transplantation, with other common indications to include primary pulmonary hypertension and cystic fibrosis. The frequency of heart-lung transplantation is limited due to the number of suitable donors, while the need for heart-lung transplantation has declined due to the availability of new medical therapies.⁴

Contraindications for combined heart-lung transplantation are similar to those for isolated heart and lung transplantation.⁴ The International Society for Heart Lung Transplantation (ISHLT) provides listing criteria and best practice recommendations for heart-lung transplants.^{1,10}

According to the 2019 ISHLT registry report, survival rates in adult patients who underwent heart-lung transplantation has steadily improved with an overall median survival rate of 3.7 years

CLINICAL POLICY
Heart-Lung Transplant

from 1992 through 2001 to 6.5 years from 2010 through 2017. This is comparable to primary lung transplantation but is inferior to the median survival rate of heart transplantation alone.⁴

Coding Implications

This clinical policy references Current Procedural Terminology (CPT®). CPT® is a registered trademark of the American Medical Association. All CPT codes and descriptions are copyrighted 2023, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. 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.

CPT® Codes	Description
33930	Donor cardiectomy-pneumonectomy, (including cold preservation)
33933	Backbench standard preparation of cadaver donor heart/lung allograft prior to transplantation, including dissection of allograft from surrounding soft tissues to prepare aorta, superior vena cava, inferior vena cava, and trachea for implantation
33935	Heart-lung transplant with recipient cardiectomy-pneumonectomy

HCPCS Codes	Description
S2152	Solid organ(s), complete or segmental, single organ or combination of organs; deceased or living donor(s), procurement, transplantation, and related complications including: drugs; supplies; hospitalization with outpatient follow-up; medical/surgical, diagnostic, emergency, and rehabilitative services; and the number of days of pre- and post-transplant care in the global definition

Reviews, Revisions, and Approvals	Revision Date	Approval Date
New policy.	06/17	06/17
Added contraindication of “Active peptic ulcer disease”. References reviewed and updated. Codes reviewed and updated. Specialist reviewed.	03/19	04/19
References reviewed and updated. Clarified I.A.2.j, to state “Cystic fibrosis with progressive, irreversible cardiac dysfunction.” Removed the following contraindications: Severe, irreversible, fixed elevation of pulmonary vascular resistance; and Uncorrected atherosclerotic disease with suspected or confirmed end-organ ischemia or dysfunction and/or coronary artery disease not amenable to revascularization. Edited malignancy contraindication to not specify within 2 years, and added exceptions early-stage prostate cancer, cancer that has been completely resected, or that has been treated and poses acceptable future risk.	03/20	04/20
References reviewed and updated. Replaced all instances of “member” with “member/enrollee.”	04/21	04/21

Reviews, Revisions, and Approvals	Revision Date	Approval Date
In B.2., removed “adequate functional status with the ability for rehabilitation.” Replaced contraindications of “history of psychological, behavioral, or cognitive disorders, poor family support structures, or documented noncompliance with previous therapies that could interfere with successful performance of care regimens after transplantation” and “current non-adherence to medical therapy...” with “Inability to adhere to the regimen necessary to preserve the transplant, even with caregiver support.” Changed “Review Date” in policy header to “Date of Last Revision,” and “Date” in the revision log header to “Revision Date.”	08/21	08/21
Annual review. References reviewed, updated, and reformatted. Updated I.C. with some contraindications from ISHLT 2021 guidelines. Background updated with no clinical significance.	02/22	02/22
Added specific congenital heart disease criteria to 2.i. Removed contraindication regarding specific congenital heart disease lesion.	05/22	05/22
Annual review completed. Removed pediatric indication of Alpha- 1 antitrypsin deficiency. Added “Lung transplantation alone will restore right ventricular function” to I.C. Updated I.C.10. to include “unless being considered for multi-organ transplant”. Criteria I.C.16. updated to exclude marijuana use when prescribed by a licensed practitioner and include required commitment to reducing substance use behaviors if urgent transplant timelines are present. ICD-10 diagnosis code table removed. Minor rewording with no clinical significance. References reviewed and updated. External specialists reviewed.	02/23	02/23
Annual review. Added indication to criteria I.A.1.j. Expanded criteria I.C.1. to I.C.1.a. through c. Removed contraindication I.C.17., active peptic ulcer disease. References reviewed and updated.	02/24	02/24

References

1. Mehra MR, Canter CE, Hannan MM, et al. The 2016 International Society for Heart Lung Transplantation listing criteria for heart transplantation: A 10-year update. *J Heart Lung Transplant.* 2016;35(1):1 to 23. doi:10.1016/j.healun.2015.10.023
2. Spahr JE, West SC. Heart-lung transplantation: pediatric indications and outcomes. *J Thorac Dis.* 2014;6(8):1129 to 1137. doi:10.3978/j.issn.2072-1439.2014.07.05
3. Canter CE, Shaddy RE, Bernstein D, et al. Indications for heart transplantation in pediatric heart disease: a scientific statement from the American Heart Association Council on Cardiovascular Disease in the Young; the Councils on Clinical Cardiology, Cardiovascular Nursing, and Cardiovascular Surgery and Anesthesia; and the Quality of Care and Outcomes Research Interdisciplinary Working Group [published correction appears in *Circulation.* 2007 Apr 3;115(13):e385. Friedman, Allen H [corrected to Friedman, Alan H]]. *Circulation.* 2007;115(5):658 to 676. doi:10.1161/CIRCULATIONAHA.106.180449
4. Singer LG, Mooney J. Heart-lung transplantation in adults. UpToDate. www.uptodate.com. Updated May 31, 2023. Accessed January 9, 2024.
5. Weill D, Benden C, Corris PA, et al. A consensus document for the selection of lung transplant candidates: 2014--an update from the Pulmonary Transplantation Council of the

- International Society for Heart and Lung Transplantation. *J Heart Lung Transplant*. 2015;34(1):1 to 15. doi:10.1016/j.healun.2014.06.014
6. Singh RK, Singh TP. Heart failure in children: Management. UpToDate. www.uptodate.com. Updated November 29, 2022. Accessed January 9, 2024.
 7. Helderman JH, Goral S. Gastrointestinal complications of transplant immunosuppression. *J Am Soc Nephrol*. 2002;13(1):277 to 287. doi:10.1681/ASN.V131277
 8. Vakil NM. Unusual causes of peptic ulcer disease. UpToDate. www.uptodate.com. Updated August 11, 2023. Accessed January 9, 2024.
 9. Weill D. Lung transplantation: indications and contraindications. *J Thorac Dis*. 2018;10(7):4574 to 4587. doi:10.21037/jtd.2018.06.141
 10. Leard LE, Holm AM, Valapour M, et al. Consensus document for the selection of lung transplant candidates: An update from the International Society for Heart and Lung Transplantation. *J Heart Lung Transplant*. 2021;40(11):1349 to 1379. doi:10.1016/j.healun.2021.07.005
 11. Le Pavec J, Hascoët S, Fadel E. Heart-lung transplantation: current indications, prognosis and specific considerations. *J Thorac Dis*. 2018;10(10):5946 to 5952. doi:10.21037/jtd.2018.09.115
 12. Connolly HM, Frantz RP. Pulmonary hypertension in adults with congenital heart disease: disease-specific management. UpToDate. www.uptodate.com. Updated November 29, 2022. Accessed January 9, 2024.
 13. Mancini D. Heart transplantation in adults: indications and contraindications. UpToDate. www.uptodate.com. Updated August 11, 2022. Accessed January 9, 2024.
 14. Hunt SA, Abraham WT, Chin MH, et al. 2009 focused update incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines: developed in collaboration with the International Society for Heart and Lung Transplantation [published correction appears in *Circulation*. 2010 Mar 30;121(12):e258]. *Circulation*. 2009;119(14):e391 to e479. doi:10.1161/CIRCULATIONAHA.109.192065
 15. Pêgo-Fernandes PM. Heart-lung transplantation: a necessity. *J Bras Pneumol*. 2020;46(3):e20190273. Published 2020 Jun 5. doi:10.36416/1806-3756/e20190273
 16. Yancy CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol*. 2013;62(16):e147 to e239. doi:10.1016/j.jacc.2013.05.019
 17. Stoller JK. Gene test interpretation: SERPINA1 (alpha-1 antitrypsin gene). UpToDate. www.uptodate.com. Updated November 28, 2023. Accessed January 9, 2024.
 18. Westerdahl DE, Kobashigawa JA. Heart Transplantation for Advanced Heart Failure. *Cardiac Intensive Care*. 2019;504-524.e2. doi:10.1016/B978-0-323-52993-8.00048-5

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

CLINICAL POLICY

Heart-Lung Transplant

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/enrollees. This clinical policy is not intended to recommend treatment for members/enrollees. Members/enrollees 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/enrollees 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/enrollees and their representatives agree to be bound by such terms and conditions by providing services to members/enrollees and/or submitting claims for payment for such services.

Note: For Medicaid members/enrollees, 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.

CLINICAL POLICY
Heart-Lung Transplant



Note: For Medicare members/enrollees, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at <http://www.cms.gov> for additional information.

©2016 Centene Corporation. All rights reserved. All materials are exclusively owned by Centene Corporation and are protected by United States copyright law and international copyright law. No part of this publication may be reproduced, copied, modified, distributed, displayed, stored in a retrieval system, transmitted in any form or by any means, or otherwise published without the prior written permission of Centene Corporation. You may not alter or remove any trademark, copyright or other notice contained herein. Centene® and Centene Corporation® are registered trademarks exclusively owned by Centene Corporation.