Concert Genetic Testing: Lung Disorders

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Revision Log

Coding implications

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

OVERVIEW

One of the most common ~~forms of~~ inherited lung disorders is alpha-1 antitrypsin deficiency (AATD). AATD is an autosomal recessive genetic disorder that results in decreased production of the alpha-1 antitrypsin (AAT) protein, or production of abnormal types of the protein that are functionally deficient. Individuals with AATD have an increased risk to develop lung and liver disease. Genetic testing to diagnose AATD aids in directing proper treatment and identifying at-risk family members.

With the use of donor-derived cell-free DNA (dd-cfDNA), biomarker tests have been developed as an alternative to more invasive procedures for post-lung transplant care to optimize graft longevity while avoiding side effects and toxicity of immunosuppressive therapies.

POLICY REFERENCE TABLE

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 and may not support medical necessity. 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.

NOTE: Coverage is subject to each requested code's inclusion on the corresponding LDH fee schedule. Non-covered codes are denoted (*) and are reviewed for Medical Necessity for

members under 21 years of age on a per case basis. The non-covered codes will only be denoted in the table below and not throughout the policy. Please only reference the policy reference table for covered and non-covered codes.

The tests ~~and,~~ associated laboratories ~~and,~~ CPT codes, and ICD codes contained within this document serve only as examples to help users navigate claims and corresponding criteria; as such, they are not comprehensive and are not a guarantee of coverage or non-coverage. Please see the Concert ~~Genetics~~ Platform for a comprehensive list of registered tests.

Criteria Sections	Example Tests (Labs)	Common CPT Codes	Common ICD Codes	Ref
Alpha-1 Antitrypsin Deficiency				
SERPINA1 Common Variant Analysis or Sequencing and/or Deletion/Duplication Analysis	Alpha-1 Antitrypsin (AAT) Mutation Analysis (Quest Diagnostics)	81332*	E88.01	1
	SERPINA1 Full Gene Sequencing and Deletion/Duplication (Invitae)	81479		
Donor-Derived Cell-free DNA for Lung Transplant Rejection				
Evidence-Based Donor-Derived Cell-free DNA for Lung Transplant Rejection	Prospera Lung (Natera)	81479	T86.810, Z48.24, Z94.2	5
	AlloSure Lung (CareDx)			
Emerging Evidence Donor-Derived Cell-free DNA for Lung Transplant Rejection	Eurofins TRAC dd-cfDNA (Transplant Genomics Inc)	0118U*		
Other Covered Lung Disorders				
Other Covered Lung Disorders	See list below	81400*-81408*		2, 3, 4

OTHER RELATED POLICIES

This policy document provides criteria for Genetic Testing for Lung Disorders. Please refer to:

- ***Genetic Testing: Multisystem Inherited Disorders, Intellectual Disability, and Developmental Delay*** for criteria related to diagnostic testing for cystic fibrosis and other multisystem inherited disorders.
- ***Genetic Testing: General Approach to Genetic and Molecular Testing*** for criteria related to genetic testing for lung disorders and disease that are not specifically discussed in this or another non-general policy, including known familial variant testing.

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CRITERIA

It is the policy of health plans affiliated with Centene Corporation® that the specific genetic testing noted below is **medically necessary** when meeting the related criteria:

ALPHA-1 ANTITRYPSIN DEFICIENCY

SERPINA1 Common Variant Analysis or Sequencing and/or Deletion/Duplication Analysis

I. *SERPINA1* common variant analysis (81332) or sequencing and/or deletion/duplication analysis (81479) to establish a diagnosis of alpha-1 antitrypsin (AAT) deficiency is considered **medically necessary** when:

A. The member/enrollee has any of the following:

1. Abnormally low (less than 120 mg/dL) or borderline (90-140 mg/dL) alpha-1 antitrypsin levels (as measured by nephelometry), **OR**
2. Early-onset emphysema (45 years of age or younger), **OR**
3. Emphysema in the absence of additional risk factor (e.g., smoking, occupational dust exposure), **OR**
4. Emphysema with prominent basilar hyperlucency, **OR**
5. Otherwise unexplained liver disease, **OR**

6. Necrotizing panniculitis, **OR**
7. C-ANCA positive vasculitis (i.e., granulomatosis with polyangiitis), **OR**
8. Bronchiectasis without evident etiology, **OR**
9. A sibling with known AAT deficiency.

II. *SERPINA1* common variant analysis (81332) or sequencing and/or deletion/duplication analysis (81479) to establish a diagnosis of alpha-1 antitrypsin deficiency is considered **investigational** for all other indications.

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DONOR-DERIVED CELL-FREE DNA FOR LUNG TRANSPLANT REJECTION

Evidence-Based Donor-Derived Cell-free DNA for Lung Transplant Rejection

I. The use of peripheral blood measurement of donor-derived cell-free DNA tests (81479) with sufficient evidence of clinical utility and validity in the management of patients after lung transplantation is considered **medically necessary** when:

A. The member/enrollee has undergone lung transplantation, **AND**

B. The test has not been performed in the last 12 months, **AND**

C. The member/enrollee meets at least one of the following:

1. The member/enrollee has clinical signs of acute rejection, **OR**
2. A biopsy was done and is inconclusive for rejection, **OR**
3. The member/enrollee is being monitored for adequate immunosuppression.

II. The use of peripheral blood measurement of donor-derived cell-free DNA tests (81479) in the management of patients after lung transplantation is considered **investigational** for all other indications.

Emerging Evidence Donor-Derived Cell-free DNA for Lung Transplant Rejection

I. Donor-derived cell-free DNA tests with insufficient evidence of clinical validity (0118U) in the management of patients after lung transplantation are considered **investigational**.

OTHER COVERED LUNG DISORDERS

The following is a list of conditions that have a known genetic association. Due to their relative rareness, it may be appropriate to cover these genetic tests to establish or confirm a diagnosis.

I. Genetic testing to establish or confirm one of the following genetic lung disorders to guide management is considered **medically necessary** when the member/enrollee demonstrates clinical features* consistent with the disorder (the list is not meant to be comprehensive, see II below):

   A. Familial Pulmonary Fibrosis
   B. Primary Ciliary Dyskinesia
   C. Pulmonary lymphangioleiomyomatosis (LAM)
   D. Pulmonary alveolar proteinosis (PAP)

II. Genetic testing to establish or confirm the diagnosis of all other lung disorders not specifically discussed within this or another medical policy will be evaluated by the criteria outlined in *General Approach to Genetic and Molecular Testing* (see policy for criteria).

*Clinical features for a specific disorder may be outlined in resources such as GeneReviews, OMIM, National Library of Medicine, Genetics Home Reference, or other scholarly source.

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BACKGROUND AND RATIONALE

ALPHA-1 ANTITRYPSIN DEFICIENCY

SERPINA1 Common Variant Analysis or Sequencing and/or Deletion/Duplication Analysis

American Thoracic Society and European Respiratory Society

The American Thoracic Society and European Respiratory Society published a joint statement on the diagnosis and management of individuals with alpha-1 antitrypsin deficiency (2003) which provided recommendations for diagnostic testing.

A normal range of plasma alpha-1 antitrypsin (measured via nephelometry) is 83/120 - 200/220 mg/dL. Individuals with borderline normal levels of plasma alpha-1 antitrypsin (90-140 mg/dL) or with abnormally low levels (below 120 mg/dL) should be evaluated for alpha-1 antitrypsin deficiency. (p. 826 and 827)

"The following features should prompt suspicion by physicians that their patient may be more likely to have AAT deficiency:

- Early-onset emphysema (age of 45 years or less)
- Emphysema in the absence of a recognized risk factor (smoking, occupational dust exposure, etc.)
- Emphysema with prominent basilar hyperlucency
- Otherwise unexplained liver disease
- Necrotizing panniculitis
- Anti-proteinase 3-positive vasculitis (C-ANCA [anti-neutrophil cytoplasmic antibody]-positive vasculitis)
- Family history of any of the following: emphysema, bronchiectasis, liver disease, or panniculitis
- Bronchiectasis without evident etiology…" (p. 820)

The statement also recommended that individuals with a sibling with AAT deficiency should also be offered genetic testing. (p. 827)

DONOR-DERIVED CELL-FREE DNA FOR LUNG TRANSPLANT REJECTION

Evidence-Based Donor-Derived Cell-free DNA for Lung Transplant Rejection

Centers for Medicare and Medicaid Services

The CMS local coverage determination (LCD) entitled "MolDX: Molecular Testing for Solid Organ Allograft Rejection" states the following regarding donor-derived cell-free DNA tests in individuals who have had solid organ transplantation:

"This Medicare contractor will provide limited coverage for molecular diagnostic tests used in the evaluation and management of patients who have undergone solid organ transplantation. These tests can inform decision making along with standard clinical assessments in their evaluation of organ injury for active rejection (AR).

These tests may be ordered by qualified physicians considering the diagnosis of AR affiliated with a transplant center, helping to rule in or out this condition when assessing the need for or results of a diagnostic biopsy. They should be considered along with other clinical evaluations and results and may be particularly useful in patients with significant contraindications to invasive procedures.

The intended use of the test must be:

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- To assist in the evaluation of adequacy of immunosuppression, wherein a non-invasive or minimally invasive test can be used in lieu of a tissue biopsy in a patient for whom information from a tissue biopsy would be used to make a management decision regarding immunosuppression, OR
- As a rule-out test for AR in validated populations of patients with clinical suspicion of rejection with a non-invasive or minimally invasive test to make a clinical decision regarding obtaining a biopsy, OR
- For further evaluation of allograft status for the probability of allograft rejection after a physician-assessed pretest, OR
- To assess rejection status in patients that have received a biopsy, but the biopsy results are inconclusive or limited by insufficient material."

Concert Note

For monitoring patients post lung transplantation, absent clear, specific and evidence-based guideline recommendations for a particular regimen of screening, a default frequency of once every 12 months will be adopted.

Emerging Evidence Donor-Derived Cell-free DNA for Lung Transplant Rejection

Tests that have limited established clinical utility or validity as defined in the Concert policy for General Approach to Genetic and Molecular testing do not meet the threshold for coverage. Evidence for validity may include a Technology Assessment conducted by an independent third party (e.g.MolDx Tech, ECRI, Optum Genomic) and/or evidence-based guidelines published by professional societies. Such evidence was not identified for the tests referenced by this policy.

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Reviews, Revisions, and Approvals	Revision Date	Approval Date	Effective Date
Converted corporate to local policy.	09/23	11/27/23	
Semi-annual review. Updated title to reflect V1.2024 version. Overview, coding, reference-table, background and references updated. Throughout policy: replaced "coverage criteria" with "criteria. For Policy Reference Table: under "SERPINA1 Common Variant…" added "E88.01". For Background and Rationale; under "SERPINA1 Known Familial Variant Analysis: replaced "inheritance patterns" with "genetic testing".	12/23	2/27/24	
Semi-annual review. Updated title to reflect V2.2024 version. In *SERPINA1* Common Variant Analysis or Sequencing and/or Deletion/Duplication Analysis criteria, updated criteria to better align with current guidelines, allowing for an expansion to coverage. In *SERPINA1* Known Familial Variant Analysis criteria, moved criteria to policy "Genetic Testing: General Approach to Genetic and Molecular Testing" to consolidate criteria for known familial variant tests. Minor rewording for	06/24	9/4/24	10/4/24

clarity throughout. Coding, reference-table, background and references updated.			
Semi-annual review. Updated title to reflect V1.2025 version. Evidence-Based Donor-Derived Cell-free DNA for Lung Transplant Rejection: NEW criteria based on LCD guidelines. Emerging Evidence Donor-Derived Cell-free DNA for Lung Transplant Rejection: NEW Criteria set created for lung cancer diagnostic algorithmic tests for which clinical validity has not been established.	1/25		

~~References~~

REFERENCES

1. American Thoracic Society; European Respiratory Society. American Thoracic Society/European Respiratory Society statement: standards for the diagnosis and management of individuals with alpha-1 antitrypsin deficiency. Am J Respir Crit Care Med. 2003;168(7):818-900. doi:10.1164/rccm.168.7.818
2. Adam MP, Ardinger HH, Pagon RA, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-~~2023~~2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK1116/
3. Online Mendelian Inheritance in Man, OMIM®. McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University (Baltimore, MD). World Wide Web URL: https://omim.org/
4. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US). Available from: https://medlineplus.gov/genetics/.
5. Centers for Medicare & Medicaid Services. Medicare Coverage Database: Local Coverage Determination. MolDX: Molecular Testing for Solid Organ Allograft Rejection (L38582). Available at: https://www.cms.gov/medicare-coverage-database/view/lcd.aspx?lcdid=38582

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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. LHCC makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing

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