

Policy: MP168

Section: Medical Benefit Policy

Subject: Non-invasive Testing for Organ Transplant Rejection

Applicable line of business:

Commercial	x	Medicaid	x
Medicare	x	ACA	x
CHIP	x		

I. Policy: Non-invasive Testing for Organ Transplant Rejection

II. Purpose/Objective:

To provide a policy of coverage regarding Non-invasive Testing for Organ Transplant Rejection

III. Responsibility:

- A. Medical Directors
- B. Medical Management

IV. Required Definitions

1. Attachment – a supporting document that is developed and maintained by the policy writer or department requiring/authoring the policy.
2. Exhibit – a supporting document developed and maintained in a department other than the department requiring/authoring the policy.
3. Devised – the date the policy was implemented.
4. Revised – the date of every revision to the policy, including typographical and grammatical changes.
5. Reviewed – the date documenting the annual review if the policy has no revisions necessary.

Commercial

Geisinger Health Plan may refer collectively to health care coverage sponsors Geisinger Health Plan, Geisinger Quality Options, Inc., and Geisinger Indemnity Insurance Company, unless otherwise noted. Geisinger Health Plan is part of Geisinger, an integrated health care delivery and coverage organization.

Medicare

Geisinger Gold Medicare Advantage HMO, PPO, and HMO D-SNP plans are offered by Geisinger Health Plan/Geisinger Indemnity Insurance Company, health plans with a Medicare contract. Continued enrollment in Geisinger Gold depends on contract renewal. Geisinger Health Plan/Geisinger Indemnity Insurance Company are part of Geisinger, an integrated health care delivery and coverage organization.

CHIP

Geisinger Health Plan Kids (GHP Kids) is a Children’s Health Insurance Program (CHIP) offered by Geisinger Health Plan in conjunction with the Pennsylvania Department of Human Services (DHS). Geisinger Health Plan is part of Geisinger, an integrated health care delivery and coverage organization.

Medicaid

Geisinger Health Plan Family (GHP Family) is a Medical Assistance (Medicaid) insurance program offered by Geisinger Health Plan in conjunction with the Pennsylvania Department of Human Services (DHS). Geisinger Health Plan is part of Geisinger, an integrated health care delivery and coverage organization.

V. Additional Definitions

Medical Necessity or Medically Necessary means Covered Services rendered by a Health Care Provider that the Plan determines are:

- a. appropriate for the symptoms and diagnosis or treatment of the Member's condition, illness, disease or injury;
- b. provided for the diagnosis, and the direct care and treatment of the Member's condition, illness disease or injury;
- c. in accordance with current standards of good medical treatment practiced by the general medical community.
- d. not primarily for the convenience of the Member, or the Member's Health Care Provider; and
- e. the most appropriate source or level of service that can safely be provided to the Member. When applied to hospitalization, this further means that the Member requires acute care as an inpatient due to the nature of the services rendered or the Member's condition, and the Member cannot receive safe or adequate care as an outpatient.

Medicaid Business Segment

Medically Necessary — A service, item, procedure, or level of care that is necessary for the proper treatment or management of an illness, injury, or disability is one that:

- Will, or is reasonably expected to, prevent the onset of an illness, condition, injury or disability.
- Will, or is reasonably expected to, reduce or ameliorate the physical, mental or developmental effects of an illness, condition, injury or disability.
- Will assist the Member to achieve or maintain maximum functional capacity in performing daily activities, taking into account both the functional capacity of the Member and those functional capacities that are appropriate for Members of the same age

DESCRIPTION:

The Heartsbreath test assesses heart transplant rejection by measuring the amount of methylated alkanes, a marker of oxidative stress, in the patient's breath. Heart transplant rejection seems to be accompanied by oxidative stress which degrades membrane polyunsaturated fatty acids, creating methylated alkanes that are then excreted in the breath as volatile organic compounds. As per the FDA-approved product labeling, the product is to be used along with endomyocardial biopsy, to diagnose grade 3 heart transplant rejection in patients who have received a heart transplant within the past year.

AlloMap Molecular Expression Testing is a non-invasive, 20-gene expression assay that measures the activity of the immune system with respect to the risk of cardiac allograft rejection. In essence, the testing is thought to detect the absence of rejection in a transplanted heart.

AlloSure is an advanced Next Generation Sequencing (NGS), non-invasive diagnostic test that monitors heart transplant health by quantification of donor-derived cell-free DNA (dd-cfDNA).

Prospera is a non-invasive cf-DNA next-generation sequencing assay that targets over 13,926 single-nucleotide polymorphisms (SNPs) to accurately quantify the fraction of dd-cfDNA in the transplant recipient's blood.

TruGraf-Liver is a blood-based mRNA gene expression test that provides guidance for the optimization of immunosuppression therapy in liver transplant recipients.

INDICATIONS:

Heart Transplant Testing

AlloMap and AlloSure Heart Transplant Testing

For COMMERCIAL BUSINESS SEGMENT:

AlloMap testing is considered medically necessary when the following criteria are met:

- The member is 15 years of age or older; and
- The member is between 6 months and 5 years post-transplant; and
- The member is otherwise clinically stable and without overt evidence of acute rejection; and
- The member is has not received high dose steroids within the preceding 21 days; and
- The member has not received blood transfusion or hematopoietic growth factor within the preceding 30 days

AlloSure Heart [donor-derived cell-free DNA (dd-cfDNA)] is covered when used in conjunction with AlloMap® to assess the probability of allograft rejection in heart transplant recipients with clinical suspicion of rejection and to inform clinical decision-making about the necessity of a heart biopsy in such patients at least 55 days post-transplant in conjunction with standard clinical assessment.

For MEDICARE AND MEDICAID BUSINESS SEGMENTS:

CMS directives allows AlloMap, an In Vitro Diagnostic Multivariate Index assay (IVDMIA) test service performed in a single laboratory to aid in the identification of heart transplant recipients with stable allograft function who have a low probability of moderate/severe acute cellular rejection (ACR) at the time of testing in conjunction with standard clinical assessment. Palmetto GBA established a formal coverage policy for all Medicare patients. This local carrier determination is applicable nationally.

Renal Transplant Testing

For COMMERCIAL and MEDICARE BUSINESS SEGMENTS:

AlloSure Kidney Transplant

AlloSure Kidney [donor-derived cell-free DNA (dd-cfDNA)] is covered to assess the probability of allograft rejection in kidney transplant recipients with clinical suspicion of rejection and to inform clinical decision-making about the necessity of renal biopsy in such patients at least 2 weeks post-transplant in conjunction with standard clinical assessment.

OmniGraf Kidney Transplant

OmniGraf (combined gene expression profiling and donor-derived cell-free DNA testing) is covered to assess both subclinical acute rejection and clinical acute rejection and to inform clinical decision-making about the necessity of renal biopsy in conjunction with standard clinical assessment.

Prospera Renal Transplant Testing (dd-cfDNA) is covered in the following scenarios:

- To assist in the evaluation of adequacy of immunosuppression in lieu of a tissue biopsy to make a management decision regarding immunosuppression, OR
- As a rule-out test for acute rejection in validated populations of patients with clinical suspicion of rejection 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 members that have undergone biopsy, but the results are inconclusive or limited by insufficient tissue sampling

For MEDICARE BUSINESS SEGMENTS:

The Prospera assay is covered only when the following clinical conditions are met:

- First time renal allograft recipients; and
- Physician-assessed pretest need to further evaluate the member for the probability of active renal allograft rejection

TruGraf Blood Gene Expression Test

The TruGraf Blood Gene Expression Test is covered only when the following clinical conditions are met:

- The member is at least 18 years of age.
- Recipient of a primary or subsequent deceased-donor or living-donor kidney transplantation.
- Stable serum creatinine (current serum creatinine <2.3 mg/dl, <20% increase compared to the average of the previous 3 serum creatinine levels).
- Kidney transplant patients who are more than 90 days post-transplant.
- The member is being managed in a facility that utilizes surveillance biopsies

LUNG TRANSPLANT TESTING

FOR MEDICARE BUSINESS SEGMENT:

AlloSure Lung

Per LCD A58207 MoLDX: Molecular Testing for Solid Organ Allograft Rejection which has jurisdiction for PA Medicare beneficiaries, AlloSure Lung is a covered service.

Per LCD A58019 MoLDx Molecular Testing for Solid Organ Allograft Rejection Prospera is a covered service for monitoring of Renal, heart or lung transplants.

EXCLUSIONS:

The Plan does **NOT** provide coverage for Heartsbreath breathing test for heart transplant rejection detection because it is considered **experimental, investigational or unproven**. There is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this treatment on health outcomes when compared to established treatments or technologies.

The Plan does **NOT** provide coverage for the use of peripheral blood measurement of donor-derived cell-free DNA in the management of patients after heart transplantation (e.g., myTAIHEART), including but not limited to the detection of acute transplant rejection because it is considered experimental, investigational or unproven. There is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this treatment on health outcomes when compared to established treatments or technologies.

Unless otherwise mandated, the Plan does **NOT** provide coverage for the use of peripheral blood measurement of donor-derived cell-free DNA in the management of patients after lung transplantation, including but not limited to the detection of acute transplant rejection or transplant graft dysfunction because it is considered experimental, investigational or unproven. There is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this treatment on health outcomes when compared to established treatments or technologies.

The Plan does **NOT** provide coverage for the use of CXCL10 Urine Test because it is considered unproven. There is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this treatment on health outcomes when compared to established treatments or technologies.

Medicaid Business Segment:

Any requests for services, that do not meet criteria set in the PARP, may be evaluated on a case by case basis.

Note: A complete description of the process by which a given technology or service is evaluated and determined to be experimental, investigational or unproven is outlined in MP 15 - Experimental Investigational or Unproven Services or Treatment.

CODING ASSOCIATED WITH: Breath Testing for Heart Transplant Rejection

The following codes are included below for informational purposes and may not be all inclusive. Inclusion of a procedure or device code(s) does not constitute or imply coverage nor does it imply or guarantee provider reimbursement. Coverage is determined by the member specific benefit plan document and any applicable laws regarding coverage of specific services. Please note that per Medicare coverage rules, only specific CPT/HCPCS Codes may be covered for the Medicare Business Segment. Please consult the CMS website at www.cms.gov or the local Medicare Administrative Carrier (MAC) for more information on Medicare coverage and coding requirements.

- 0085T Breath Test For Heart Transplant Rejection
- 81479 Unlisted molecular pathology procedure {AlloSure Heart, AlloSure Kidney, AlloSure Lung, Prospera, TruGraf, OmniGraf}
- 81558 Transplantation medicine (allograft rejection, kidney), mRNA, gene expression profiling by quantitative polymerase chain reaction (qPCR) of 139 genes, utilizing whole blood, algorithm reported as a binary categorization as transplant excellence, which indicates immune quiescence, or not transplant excellence, indicating subclinical rejection {TruGraf}
- 81560 Transplantation medicine (allograft rejection, pediatric liver and small bowel) measurement of donor and third party induced CD154=T- cytotoxic memory cells, utilizing whole peripheral blood, algorithm reported as rejection risk score
- 81595 Cardiology (heart transplant), mRNA, gene expression profiling by real-time quantitative PCR of 20 genes (11 content and 9 housekeeping), utilizing subfraction of peripheral blood, algorithm reported as a rejection risk score {AlloMap}

- 86849 Unlisted immunology procedure {*Allosure Heart, Allosure Kidney, Allosure Lung, MMDX Lung, Kidney Solid Organ Response Test (ksort), nCounter Human Organ Transplant Panel, Prospera, QiSant (also known as Qsant), TruGraf Blood Gene Expression Test*}
- 0055U Cardiology (heart transplant), cell-free DNA, PCR assay of 96 DNA target sequences (94 single nucleotide polymorphism targets and two control targets), plasma {*MyTAIHeart*}
- 0087U Cardiology (heart transplant), mRNA gene expression profiling by microarray of 1283 genes, transplant biopsy tissue, allograft rejection and injury algorithm reported as a probability score {*MMDX Heart*}
- 0088U Transplantation medicine (kidney allograft rejection), microarray gene expression profiling of 1494 genes, utilizing transplant biopsy tissue, algorithm reported as a probability score for rejection {*MMDX Kidney*}
- 0118U Transplantation medicine, quantification of donor-derived cell-free DNA using whole genome next-generation sequencing, plasma, reported as percentage of donor-derived cell-free DNA in the total cell-free DNA {*Viacor TRAC*}
- 0319U Nephrology (renal transplant), RNA expression by select transcriptome sequencing, using pretransplant peripheral blood, algorithm reported as a risk score for early acute rejection (*Clarava™*)
- 0320U Nephrology (renal transplant), RNA expression by select transcriptome sequencing, using posttransplant peripheral blood, algorithm reported as a risk score for acute cellular rejection (*Tuteva™*)
- 0493U Transplantation medicine, quantification of donor-derived cell-free DNA (cfDNA) using next-generation sequencing, plasma, reported as percentage of donor-derived cell-free DNA
- 0508U Transplantation medicine, quantification of donor-derived cell-free DNA using 40 single-nucleotide polymorphisms (SNPs), plasma, and urine, initial evaluation reported as percentage of donor-derived cell-free DNA with risk for active rejection
- 0509U Transplantation medicine, quantification of donor-derived cell-free DNA using up to 12 single-nucleotide polymorphisms (SNPs) previously identified, plasma, reported as percentage of donor-derived cell-free DNA with risk for active rejection
- 0526U Nephrology (renal transplant), quantification of CXCL10 chemokines, flow cytometry, urine, reported as pg/mL creatinine baseline and monitoring over time

Current Procedural Terminology (CPT®) © American Medical Association: Chicago, IL.

LINE OF BUSINESS:

Eligibility and contract specific benefits, limitations and/or exclusions will apply. Coverage statements found in the line of business specific benefit document will supersede this policy. For Medicare, applicable LCD's and NCD's will supercede this policy. For PA Medicaid Business segment, this policy applies as written.

REFERENCES:

Phillips M, Cataneo RN, Greenberg J, Gunawardena R, Naidu A, Rahbari-Oskoui F. Effect of Age on the Breath Methylated Alkane Contour, a Display of Apparent New Markers of Oxidative Stress. *J Lab Clin Med* 2000;136:243-9.

Sobotka PA, Gupta DK, Lansky DM, Costanzo MR, Zarling EJ. Breath Pentane is a Marker of Acute Cardiac Allograft Rejection. *J Heart Lung Transplant.* 1994 Mar-Apr;13(2):1147-8.

Phillips et al. Heart Allograft Rejection: Detection with breath Alkanes in Low Levels (the HARDBALL Study). *J Heart Lung Transplant* 2004; 23:701-8.

U.S. Food and Drug Administration (FDA), Center for Devices and Radiological Health (CDRH). Menssana Research, Inc. Heartsbreath test for grade 3 heart transplant rejection. Humanitarian Device Exemption No.H030004. Rockville MD: FDA; February 24, 2004.

Deng MC, Eisen HJ, Mehra MR, et al. Noninvasive discrimination of rejection in cardiac allograft recipients using gene expression profiling. *Am J Transplant.* 2006; 6(1):150-160.

XDx Inc., Invasive Monitoring Attenuation through Gene Expression (IMAGE) Trial. NLM Identifier: NCT00351559. Last updated on February 20, 2007. Available at: <http://clinicaltrials.gov/show/NCT00351559>.

Evans RW, Williams GE, Baron HM. The economic implications of noninvasive molecular testing for cardiac allograft rejection. *Am J Transplant.* 2006; 5(6):1553-1558.

Morgun A, Shulzhenko N, Perez-Diaz A, Diniz V.Z. R, Sanson GF, Almeida DR, Matzinger P, Gerbase-DeLima M. Molecular profiling improves diagnoses of rejection and infection in transplanted organs. *Circ Res.* 2006, 98:e74-e83.

Winifred S. Hayes. Allomap Molecular Expression testing (XDx Inc.[Expression Diagnostics]) for detection of heart transplant rejection. Winifred S. Hayes (online) Current as of August 23, 2006.

ECRI Institute. Emerging Technology (TARGET) Evidence Report (online). Gene Expression profiling to monitor acute heart transplant rejection. Plymouth Meeting, PA. ECRI Institute. Current as of September 2007.

Centers for Medicare and Medicaid Services. Decision Memo for Heartsbreat Test for Heart Transplant Rejection. (CAG 00394N) <https://www.cms.hhs.gov/mcd/viewdecisionmemo.asp?from2=viewdecisionmemo.asp&id=217&>

Starling RC, Pham M, Valentine H et al. Molecular testing in the management of cardiac transplant recipients: initial clinical experience. February 2007; 25(2):1389- 1395.

Deng MC, Eisen HJ, Mehra MR, Billingham CC et al. Noninvasive discrimination of rejection in cardiac allograft recipients using gene expression profiling. *Am J Transplant* 2006; 6:150-160.

Pham MX, Teuteberg JJ, Kfouy AG, Starling RC et al. Gene-expression profiling for rejection surveillance after cardiac transplantation. *N Engl J Med* 2010; Epub ahead of print.

ECRI Institute. Gene expression profiling to monitor acute heart transplant rejection. [Emerging Technology evidence report]. Plymouth Meeting (PA): ECRI Institute. Apr 4, 2009. Accessed Dec 15, 2009.

National Coverage Determination (NCD) for Heartsbreath Test for Heart transplant Rejection (260.10)

ECRI Institute. Gene expression profiling to monitor acute heart transplant rejection. [Emerging Technology evidence report]. Plymouth Meeting (PA): ECRI Institute. December 30, 2011. Accessed November, 22, 2013.

ECRI Institute. Gene expression profiling to monitor acute heart transplant rejection. [Emerging Technology evidence report]. Plymouth Meeting (PA): ECRI Institute. August 20, 2014. Accessed November 24, 2015.

Kobashigawa J, Patel J, Azarbal B, et al. Randomized Pilot Trial of Gene Expression Profiling Versus Heart Biopsy in the First Year After Heart Transplant: Early Invasive Monitoring Attenuation Through Gene Expression Trial (EIMAGE). *Circ Heart Fail*. Feb 19 2015.

Deng MC, Elashoff B, Pham MX, et al. Utility of Gene Expression Profiling Score Variability to Predict Clinical Events in Heart Transplant Recipients. *Transplantation*. Jan 31 2014.

Chruscinski A, Huang FYY, Nguyen A, et al. Generation of Antigen Microarrays to Screen for Autoantibodies in Heart Failure and Heart Transplantation. Cohen IR, ed. *PLoS ONE*. 2016;11(3):e0151224

Fujita, B, Prashovikj, E, Schulz, U, et al. Predictive value of gene expression profiling for long-term survival after heart transplantation. *Transplant immunology*. 2017 Mar;41:27-31.

Crespo-Leiro MG, Stypmann J, Schulz U, et al. Clinical usefulness of gene-expression profile to rule out acute rejection after heart transplantation: CARGO II. *Eur Heart J*. 2016; 37(33):2591-2601.

Regalie W, Stamm K, Hidestrand P. Novel assay to calculate donor fraction of cell-free DNA in heart transplant. *J Am Coll Cardiol*. 2018;71(11):supplement A764

Agbor-Enoh S, Tunc I, De Vlaminck I, et al. Applying rigor and reproducibility standards to assay donor-derived cell-free DNA as a non-invasive method for detection of acute rejection and graft injury after heart transplantation. *J Heart Lung Transplant*. 2017;36(9):1004-1012

Khush KK, Patel J, Pinney S, et al. Noninvasive detection of graft injury after heart transplant using donor-derived cell-free DNA: A prospective multicenter study. *Am J Transplant*. 2019 Mar 5

Knight SR, Thorne A, Lo Faro ML. Donor-specific cell-free DNA as a biomarker in solid organ transplantation. A systematic review. *Transplantation*. 2019;103(2):273-283

Bromberg J, Brennan D, Poggio E, et al. Biological variation of donor-derived cell-free DNA in renal transplant recipients: clinical implications. *The Journal of Applied Laboratory Medicine*: 2017;3(3):309-32

Bloom RD, Bromberg JS, Poggio ED, et al. Cell-free DNA and active rejection in kidney allografts. *J Am Soc Nephrol.* 2017;28(7):2221-2232.

Huang, et al. Early clinical experience using donor-derived cell-free DNA to detect rejection in kidney transplant recipients. *Transplantation.* 2019

Ituğ Y, Liang N, Ram R, et al. Analytical validation of a single-nucleotide polymorphism-based donor-derived cell-free DNA assay for detecting rejection in kidney transplant patients. *Transplantation,* 2019

Sigdel TK, Archila FA, Constantin T, et al. Optimizing detection of kidney transplant injury by assessment of donor-derived cell-free DNA via massively multiplex PCR. *J Clin Med.* 2019;8(1):19.

Local Coverage Determination (LCD): MOLDX: Prospera™ (L38041)

Local Coverage Determination (LCD): MolDX: AlloSure® or Equivalent Cell-Free DNA Testing for Kidney and Heart Allografts (L38255)

Gondi KT, Kao A, Linard J, et al. Single-center utilization of donor-derived cell-free DNA testing in the management of heart transplant patients. *Clin Transplant.* 2021;35(5):e14258.

Richmond ME, Zangwill SD, Kindel SJ, et al. Donor fraction cell-free DNA and rejection in adult and pediatric heart transplantation. *J Heart Lung Transplant.* 2020;39(5):454-63.

Cheng D, Liu F, Xie K, et al. Donor-derived cell-free DNA: An independent biomarker in kidney transplant patients with antibody-mediated rejection. *Transplant immunology.* 2021:101404.

Shen, Guo L, Yan P, et al. Prognostic value of the donor-derived cell-free DNA assay in acute renal rejection therapy: A prospective cohort study. *Clin Transplant.* 2020;34(10):e14053.

North PE, Ziegler E, Mahnke DK, et al. Cell-free DNA donor fraction analysis in pediatric and adult heart transplant patients by multiplexed allele-specific quantitative PCR: Validation of a rapid and highly sensitive clinical test for stratification of rejection probability. *PLoS One.* 2020;15(1):e0227385.

Peddi VR, Patel PS, Schieve C, et al. Serial peripheral blood gene expression profiling to assess immune quiescence in kidney transplant recipients with stable renal function. *Ann Transplant.* 2020;25:e920839.

Wijtvliet VPWN, Plaeke P, Abrams S, et al. Donor-derived cell-free DNA as a biomarker for rejection after kidney transplantation: A systematic review and meta-analysis. *Transpl Int.* 2020;33(12):1626-1642

Guzzi F, Cirillo L, Buti E, et al. Urinary biomarkers for diagnosis and prediction of acute kidney allograft rejection: A systematic review. *Int J Mol Sci.* 2020;21(18):6889.

Guzzi F, Knight SR, Ploeg RJ, Hunter JP. A systematic review to identify whether perfusate biomarkers produced during hypothermic machine perfusion can predict graft outcomes in kidney transplantation. *Transpl Int.* 2020;33(6):590-602.

Bu L, Gupta G, Pai A, et al. Validation and clinical outcome in assessing donor-derived cell-free DNA monitoring insights of kidney allografts with longitudinal surveillance (ADMIRAL) study. *Kidney International.* 2022 doi: <https://doi.org/10.1016/j.kint.2021.11.034>.

Billing and Coding: MolDX: AlloSure® or Equivalent Cell-Free DNA Testing for Kidney and Heart Allografts
MolDx A58387

Park S, Guo K, et al. Combining Blood Gene Expression and Cell-Free DNA to Diagnose Subclinical Rejection in Kidney Transplant Recipients *Clinical Journal of the American Society of Nephrology,* August 2021

Agbor-Enoh, S., et al., Donor-derived cell-free DNA predicts allograft failure and mortality after lung transplantation. *EBioMedicine,* 2019;40: 541-553.

Sayah D, Weigt SS, et al. Plasma Donor-derived Cell-free DNA Levels Are Increased During Acute Cellular Rejection After Lung Transplant: Pilot Data. *Transplantation direct.* 2020;6(10):e608.

Khush KK, De Vlaminc I, et al. Donor-derived, cell-free DNA levels by next-generation targeted sequencing are elevated in allograft rejection after lung transplantation. ERJ Open Res. 2021;7(1).

Keller, M. B., Mutebi, C., Shah, P., Levine, D., Aryal, S., et al. Performance of Donor Derived Cell-Free DNA in Routine Clinical Care of Lung Transplant Recipients, a Multi-Center Study. The Journal of Heart and Lung Transplantation, 2021;40(4), S148

MolDX: Molecular Testing for Solid Organ Allograft Rejection A58207

Peabody J, Billings P, Valdenor C, et al. Randomized clinical trial of a novel donor derived cfDNA test to detect rejection in CPV-simulated renal transplant patients Int. Urol. Nephrol. 2020; 52(8):1593-1601.

Halloran PF, Reeve J, et al. Antibody-mediated Rejection Without Detectable Donor-specific Antibody Releases Donor-derived Cell-free DNA. Transplantation Oct 5, 2022

Qazi Y, Patel A, et al. Incorporation of Donor-derived Cell-free DNA Into Clinical Practice for Renal Allograft Management. Transplant Proc. 2021;1-7

Halloran PF, Reeve J, Madill-Thomsen KS, et al. The Trifecta Study: Comparing Plasma Levels of Donor-derived Cell-Free DNA with the Molecular Phenotype of Kidney Transplant Biopsies. J Am Soc Nephrol. 2022;33:387-400.

Gauthier PT, Madill-Thomsen KS, et al. Distinct Molecular Processes Mediate Donor-derived Cell-free DNA Release From Kidney Transplants in Different Disease States Transplantation Jan 4 2024

Levitsky J, Kandpal M, Guo K, et al. Prediction of Liver Transplant Rejection With a Biologically Relevant Gene Expression Signature. Transplantation. 2022;106(5):1004-1011.

This policy will be revised as necessary and reviewed no less than annually.

Devised: 12/23/05

Revised: 12/07(addition of Allomap), 1/13 (Medicare segment), 12/17 (add indication); 12/19 (add exclusion for cfDNA), 10/20 (Revise title, add Medicare coverage for renal transplant); 10/21(add TruGraf coverage); 5/22 (add OmniGraf coverage); 4/23 (add lung transplant exclusion), 11/23 (add Medicare coverage of AlloSure Lung); 11/24 (add Prospera coverage), 12/24 (add Exclusion)

Reviewed: 12/06, 12/09; 12/10, 1/12, 1/14, 1/15, 1/16, 1/17, 12/18

CMS UM Oversight Committee Approval: 12/23, 12/24

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Coverage for experimental or investigational treatments, services and procedures is specifically excluded under the member's certificate with Geisinger Health Plan. Unproven services outside of an approved clinical trial are also specifically excluded under the member's certificate with Geisinger Health Plan. This policy does not expand coverage to services or items specifically excluded from coverage in the member's certificate with Geisinger Health Plan. Additional information can be found in MP015 Experimental, Investigational or Unproven Services.

Prior authorization and/or pre-certification requirements for services or items may apply. Pre-certification lists may be found in the member's contract specific benefit document. Prior authorization requirements can be found at <https://www.geisinger.org/health-plan/providers/ghp-clinical-policies>

Please be advised that the use of the logos, service marks or names of Geisinger Health Plan, Geisinger Quality Options, Inc. and Geisinger Indemnity Insurance Company on a marketing, press releases or any communication piece regarding the contents of this medical policy is strictly prohibited without the prior written consent of Geisinger Health Plan. Additionally, the above medical policy does not confer any endorsement by Geisinger Health Plan, Geisinger Quality Options, Inc. and Geisinger Indemnity Insurance Company regarding the medical service, medical device or medical lab test described under this medical policy.