# CONCERT GENETIC TESTING: IMMUNE, AUTOIMMUNE, AND RHEUMATOID 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

Immunodeficiency disorders typically result from the use of a drug or from a ~~long-lasting significant~~chronic disorder (e.g., cancer), however a subset of immunodeficiency disorders are inherited. Immunodeficiency disorders impair the immune system's ability to defend the body against foreign substances, such as bacteria, viruses, and cancer cells. As a result, infections or cancers can develop. Individuals with immunodeficiency can also have an autoimmune disorder, such as rheumatoid arthritis.

There are two types of immunodeficiency disorders: primary and secondary. Primary disorders are relatively rare and usually present at birth, genetic in origin, and hereditary; however, some primary immunodeficiency disorders are not recognized until adulthood. Secondary disorders are more common and generally develop later in life as a result of the use of certain drugs or from conditions such as diabetes or HIV infection.

# 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 ~~2022~~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.**

~~**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 tests and associated laboratories and CPT 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~~Criteria Sections | Example Tests (Labs) | Common CPT Codes | Common ICD Codes | ~~Ref~~Ref |
|---|---|---|---|---|
| ~~Known Familial Variant Analysis for Immune, Autoimmune, and Rheumatoid Disorders~~Periodic Fever Syndromes | | | | |
| ~~Known Familial Variant Analysis for Immune, Autoimmune, and Rheumatoid Disorders~~ | ~~Targeted Mutation Analysis for a Known Familial Variant~~ | ~~81403*~~ | | ~~12~~ |
| ~~Periodic Fever Syndromes~~ | | | | |
| ~~Periodic Fever Syndromes Multigene Panel~~Periodic Fever Syndromes Multigene Panel | Periodic Fever Syndromes Panel (Invitae) | 81404~~*~~** ~~,~~, 81479 | M04.1, R50.9, A68.9 | 11 |
| | Periodic Fever Syndromes Panel (PreventionGenetics, part of Exact Sciences) | | | |
| | Periodic Fever Syndromes Panel (7 genes) (GeneDx) | | | |
| ~~Rheumatoid Arthritis Biomarker Activity Panels~~Rheumatoid Arthritis Biomarker Activity Panels | | | | |

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|---|---|---|---|---|
| ~~Rheumatoid Arthritis Biomarker Activity Panels~~Rheumatoid Arthritis Biomarker Activity Panels | Vectra (Labcorp)<br>Vectra with CV Risk (Labcorp) | 81490* | M05.00-M06.9 | 1, 2 |
| **~~Genetic Algorithmic Rheumatoid Arthritis Tests~~Genetic Rheumatoid Arthritis Algorithmic Tests** | | | | |
| ~~Genetic Rheumatoid Arthritis for Tumor Necrosis Factor inhibitor (TNFi) Treatment~~Genetic Rheumatoid Arthritis for Tumor Necrosis Factor inhibitor (TNFi) Treatment | PrismRA (Scipher Medicine) | 81599*, 81479 | M05, M06, M08 | 10 |
| **~~HLA Typing for Ankylosing Spondylitis, Rheumatoid Arthritis, and Autoimmune Disorders~~HLA Typing for Axial Spondyloarthritis** | | | | |
| ~~HLA Typing for Ankylosing Spondylitis, Rheumatoid Arthritis, and Autoimmune Disorders~~HLA Typing for Axial Spondyloarthritis | HLA-B27 DNA Typing (Quest Diagnostics) | 81374* | M04.8, M04.9, M05, M06, M45 | 7, 8, 9 |
| **Other Covered Immune, Autoimmune, and Rheumatoid Disorders** | ~~HLA-B51 Behcet's Disease Association Test (Quest Diagnostics)~~ | | | |
| | ~~HLA DRB1 Typing, High Resolution (Quest Diagnostics)~~ | ~~81382~~ | | |
| **~~Other Covered Immune, Autoimmune, and Rheumatoid Disorders~~** | | | | |
| ~~Other Covered Immune Disorders~~Other Covered Immune Disorders | See below | 81400~~**~~,<br>81401~~**~~,<br>81402~~**~~,<br>81403~~**~~,<br>81404~~**~~,<br>81405~~**~~,<br>81406~~**~~,<br>81407~~**~~,<br>81408~~**~~ | | 3, 4, 5, 6 |

# OTHER RELATED POLICIES

This policy document provides criteria for Genetic Testing for Immune, Autoimmune, and Rheumatoid Disorders. Please refer to:

- ***Genetic Testing: Multisystem Inherited Disorders, Intellectual Disability, and Developmental Delay*** for criteria related to genetic disorders that affect multiple organ systems

- ***Genetic Testing: General Approach to Genetic and Molecular Testing*** for criteria related to immune disorders not specifically addressed in the policy reference table.

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# CRITERIA

It is the policy of Louisiana Healthcare Connections that the specific genetic testing noted below is **medically necessary** when meeting the related criteria:

## ~~KNOWN FAMILIAL VARIANT ANALYSIS FOR IMMUNE, AUTOIMMUNE, AND RHEUMATOID DISORDERS~~

~~I. Targeted mutation analysis for a known familial variant (81403*) for an immune, autoimmune, and rheumatoid disorder is considered **medically necessary** when:~~

~~A. The member/enrollee has a close relative with a known pathogenic or likely pathogenic variant causing the condition.~~

~~II. Targeted mutation analysis for a known familial variant (81403*) for an immune, autoimmune, and rheumatoid disorder is considered **investigational** for all other indications.~~

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## PERIODIC FEVER SYNDROME

### Periodic Fever Syndromes Multigene Panel

I. Genetic testing for periodic fever syndromes, also called hereditary recurrent fever syndromes, (e.g., Familial Mediterranean Fever, tumor necrosis factor receptor-associated periodic fever [TRAPS]) via multigene panel (81404~~*~~, 81479) is considered **medically necessary** when:

A. The member/enrollee has three or more episodes of ~~unexplained fever~~unexplained fever in a six-month period, occurring at least seven days apart, **AND**

B. Common causes of fever have been ruled out, including viral or bacterial infection.

II. Genetic testing for periodic fever syndromes, also called hereditary recurrent fever syndromes, (e.g., Familial Mediterranean Fever, tumor necrosis factor receptor-

associated periodic fever [TRAPS]) via multigene panel (81404~~*~~, 81479) is considered **investigational** for all other indications.

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# RHEUMATOID ARTHRITIS BIOMARKER ACTIVITY PANELS

## Rheumatoid Arthritis Biomarker Activity Panels

I. The use of ~~multibiomarker disease activity~~multibiomarker disease activity (MBDA) scores for rheumatoid arthritis (81490~~*))~~ is considered **investigational**.

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# GENETIC ~~ALGORITHMIC~~ RHEUMATOID ARTHRITIS ALGORITHMIC TESTS

## Tumor Necrosis Factor Inhibitor (TNFi) Treatment

I. The use of genetic ~~algorithmic~~ rheumatoid arthritis algorithmic tests to determine appropriateness of TNFi treatment (ie, PrismRA) (81599~~*~~, 81479) is considered **investigational**.

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## HLA TYPING FOR ~~ANKYLOSING SPONDYLITIS, RHEUMATOID ARTHRITIS, AND AUTOIMMUNE DISORDERS~~AXIAL SPONDYLOARTHRITIS (ankylosing spondylitis and nonradiographic axial spondyloarthritis)

I. The use of HLA-B27 typing (81374~~*, 81382~~) to confirm or establish the diagnosis of ~~ankylosing spondylitis, or another spondyloarthropathies,~~axial spondyloarthritis is considered **medically necessary** when:

   A. The member/enrollee has clinical or radiographic features of ~~ankylosing spondylitis, or another spondyloarthropathy~~axial spondyloarthritis**, AND**

   B. HLA-B27 results are needed to establish a diagnosis of ~~ankylosing spondylitis, or another spondyloarthropathy~~axial spondyloarthritis.

II. The use of HLA typing (81374~~*, 81382~~) for ~~ankylosing spondylitis, rheumatoid arthritis, and autoimmune disorders~~axial spondyloarthritis is considered **investigational** for all other indications.

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## OTHER COVERED IMMUNE, AUTOIMMUNE, AND RHEUMATOID 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 immune, autoimmune, or rheumatoid 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. Agammaglobulinemia: X-Linked and Autosomal Recessive
   B. Autoimmune Lymphoproliferative Syndrome (ALPS)
   C. Chronic Granulomatous Disease (CGD)
   D. Common Variable Immune Deficiency (CVID)
   E. Complement Deficiencies
   F. Congenital Neutropenia Syndromes (e.g., *ELANE*-Related Neutropenia)
   G. Familial Hemophagocytic Lymphohistiocytosis (HLH)
   H. Hyper IgE Syndrome (HIES)
   I. Hyper IgM Syndromes
   J. Leukocyte Adhesion Deficiency (LAD)

K. NEMO Deficiency Syndrome
L. Severe Combined Immune Deficiency (SCID) and Combined Immune Deficiency
M. WHIM Syndrome (Warts, Hypogammaglobulinemia, Infections, and Myelokathexis)
N. Wiskott-Aldrich Syndrome

II. Genetic testing to establish or confirm the diagnosis of all other immune, autoimmune, or rheumatoid 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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# DEFINITIONS

1. **Close relatives** include first, second, and third degree blood relatives on the same side of the family:

   a. **First-degree relatives** are parents, siblings, and children

   b. **Second-degree relatives** are grandparents, aunts, uncles, nieces, nephews, grandchildren, and half-siblings

   c. **Third-degree relatives** are great grandparents, great aunts, great uncles, great grandchildren, and first cousins

2.1. **Multibiomarker disease activity (MBDA) tests** for rheumatoid arthritis are an approach**:** Approach that uses serum biomarkers to measure rheumatoid arthritis disease activity.

3.2. **Unexplained fever** (or**:** A fever of unknown origin [(FUO]) is defined as a). A temperature higher than 38.3 C (100.9 F) that lasts for more than three weeks with no obvious source despite appropriate investigation. The four categories of potential etiology of FUO are classic, nosocomial, immune deficient, and human immunodeficiency virus–related. The four subgroups of the differential diagnosis of FUO are infections, malignancies, autoimmune conditions, and miscellaneous.

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# BACKGROUND AND RATIONALE

~~**Known Familial Variant Analysis for Immune, Autoimmune, and Rheumatoid Disorders**~~

~~*Genetic Support Foundation*~~

~~The Genetic Support Foundation's Genetics 101 information on genetic testing says the following about testing for familial pathogenic variants:~~

> ~~Genetic testing for someone who may be at risk for an inherited disease is always easier if we know the specific genetic cause. Oftentimes, the best way to find the genetic cause is to start by testing someone in the family who is known or strongly suspected to have the disease. If their testing is positive, then we can say that we have found the familial pathogenic (harmful) variant. We can use this as a marker to test other members of the family to see who is also at risk.~~

**Periodic Fever Syndromes Multigene Panel**

*Soon and Laxer (2017)*

A 2017 clinical review by Soon and Laxer addressing recurrent fever in childhood stated the following: "Recurrent or periodic fever syndromes are defined by 3 or more episodes of unexplained fever in a 6-month period, occurring at least 7 days apart." (p. 756) The authors recommend that: "Once infections, immunodeficiency, malignancy, inflammatory bowel disease, and adverse drug reactions have been ruled out, autoinflammatory diseases–including periodic fever syndromes–should be considered." (p. 758)

**Rheumatoid Arthritis Biomarker Activity Panels**

*American College of Rheumatology*

In 2019, The American College of Rheumatology updated guidelines on the treatment of rheumatoid arthritis (2019). In this update, the following 11 measures of disease activity were identified as fulfilling a minimum standard for regular use in most clinical settings:

Disease Activity Score (DAS)
Routine Assessment of Patient Index Data 3 (RAPID3)
Routine Assessment of Patient Index Data 5 (RAPID5)
Clinical Disease Activity Index (CDAI)
Disease Activity Score with 28 joints (DAS28-ESR/CRP)
Patient Derived DAS28, Hospital Universitario La Princesa Index (HUPI)
Multibiomarker Disease Activity Score (MBDA score, Vectra DA)

Rheumatoid Arthritis Disease Activity Index (RADAI)
Rheumatoid Arthritis Disease Activity Index 5 (RADAI-5)
Simplified Disease Activity Index (SDAI)

Although the original Vectra DA test is included in this list, the current commercially available version of the test that is now called Vectra, includes the leptin-adjusted MBDA score (now called the "adjusted MBDA score") that was not addressed in the 2019 ACR guideline. This is because evidence on Vectra with the adjusted MBDA score was published subsequent to the ACR review end date.

*ter Haar, et. al 2015*

An expert committee of pediatric and adult rheumatologists convened and created a set of recommendations for the management of autoinflammatory disease, using the European League Against Rheumatism standard operating procedure, that included the following regarding genetic evaluation:

- Management of patients with AID should ideally be guided by a multidisciplinary team in a tertiary centre with expertise in AID, with access to genetic counseling (Expert opinion, based on level 4 evidence). (p. 1637)

There is insufficient evidence to support the use of this test. No recommendations for or against this testing within standard professional society guidelines covering this area of testing were identified.

**Genetic ~~Algorithmic~~ Rheumatoid Arthritis Algorithmic Tests - Genetic Rheumatoid Arthritis for Tumor Necrosis Factor Inhibitor (TNFi) Treatment**

*Concert Genetics Evidence Review for Coverage Determination*

The 2021 statement for the treatment of rheumatoid arthritis by the American College of Rheumatology includes recommendations for genetic testing to determine the effectiveness of TNFi therapy. The peer-reviewed published clinical utility studies show there is the possibility of management changes and improved outcomes based on results of PrismRA. However, these studies have flaws, such as concern for investigator group bias and lack of randomization, as well as limited study population. Additional real-world evidence on larger and more diverse populations is needed.

At the present time, Genetic Algorithmic Rheumatoid Arthritis Tests for Anti-Tumor Necrosis Factor Inhibitor (TNFi) Treatment tests such as PrismRA have insufficient evidence in peer-reviewed publications to effectively result in improved health outcomes compared to the current standard of care.

**HLA Typing for ~~Ankylosing Spondylitis, Rheumatoid Arthritis, and Autoimmune Disorders~~Axial Spondyloarthritis**

*Rudwaleit et al 2009*

"Refinement of the candidate criteria resulted in new ASAS [Assessment of SpondyloArthritis International Society] classification criteria that are defined as: the presence of sacroiliitis by radiography or by magnetic resonance imaging (MRI) plus at least one SpA feature ("imaging arm") or the presence of HLA-B27 plus at least two SpA features ("clinical arm")." (p. 777)

*Akgul and Ozgocmen, 2011*

"HLA B-27 positivity is extremely relevant to the early diagnosis of SpA [spondyloarthropathies]. Five to 10% of the population are HLA B-27 positive and in patients with AS [ankylosing spondylitis] and SpA the positivity of HLA B-27 changes to 70% to 95% and nearly 70%, respectively." (p. 109)

*Yu and van Tubergen, UpToDate, ~~2020~~2023*

"HLA-B27 can be useful to increase the confidence of a diagnosis of axSpA [axial spondyloarthritis] in patients in whom plain radiographs or magnetic resonance imaging (MRI) also exhibit abnormalities consistent with axSpA. HLA-B27 can also be used as a screening tool in primary care in patients presenting with chronic back pain or IBP [inflammatory back pain] suspected by the primary clinician as having a significant probability for axSpA, depending upon the availability and the costs of local HLA-B27 testing. ~~Several diagnostic criteria sets include HLA-B27, including the Amor criteria, and ASAS [Assessment of SpondyloArthritis International Society] axial and peripheral spondyloarthritis criteria~~The probability of axSpA goes up from 5 to about 30 percent in chronic back pain patients and from 14 to about 60 percent in patients with IBP if HLA-B27 is positive  Thus, these patients might warrant further evaluation, including imaging."

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| Reviews, Revisions, and Approvals | Revision Date | Approval Date |
|---|---|---|
| Converted corporate to local policy. | 09/23 | 11/27/23 |
| Semi-annual review. Overview, coding, reference-table, background and references updated. Throughout policy: replaced "coverage criteria" with "criteria. For Policy Reference Table; under Other Covered Immune, Autoimmune, and Rheumatoid Disorders: added "81401, 81402, 81403, 81404, 81405, 81406, 81407,". For Other Related Policies: added "and Molecular". For Other Covered Immune, Autoimmune, and Rheumatoid Disorders: added "and Molecular". For Background and Rationale; under Known Familial Variant Analysis for Immune, Autoimmune, and Rheumatoid Disorders: replaced "inheritance patterns" with "genetic testing"; under Rheumatoid | 12/23 | 2/27/24 |

| Reviews, Revisions, and Approvals | Revision Date | Approval Date |
|---|---|---|
| Arthritis Biomarker Activity Panels: removed “its 2019 guidelines…” and added “2019”. | | |
| Semi-annual review. In Known Familial Variant Analysis for Immune, Autoimmune, and Rheumatoid Disorders criteria, moved criteria to policy “Genetic Testing: General Approach to Genetic and Molecular Testing” to consolidate criteria for known familial variant tests. In HLA Typing for Axial Spondyloarthritis criteria, updated criteria to clarify name of the condition. Minor rewording for clarity throughout. Coding, reference-table, background and references updated. | 06/24 | |

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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 this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved.

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