

**Policy: MP299**

**Section: Medical Benefit Policy**

**Subject: Measurement of Serum Antibodies to Infliximab, Adalimumab, Ustekinumab and Vedolizumab**

### Applicable Lines of Business

<b>Commercial</b>	<b>X</b>	<b>CHIP</b>	<b>X</b>
<b>Medicare</b>	<b>X</b>	<b>ACA</b>	<b>X</b>
<b>Medicaid</b>	<b>X</b>		

**I. Policy:** Measurement of Serum Antibodies to Infliximab, Adalimumab, Ustekinumab and Vedolizumab

### II. Purpose/Objective:

To provide a policy of coverage regarding Measurement of Serum Antibodies to Infliximab, Adalimumab, Ustekinumab and Vedolizumab

### 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.

### 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 measurement of serum concentrations and of antibodies has been proposed as a way to detect individuals with inadequate response to treatment with monoclonal antibodies and tumor necrosis factor drugs. Several commercial laboratory companies including, but not limited to Prometheus® Laboratories Inc. offers non-radiolabeled fluid-phase HMSA tests (e.g., Anser™IFX test for infliximab, Anser™ VDZ for vedolizumab, Anser UST for ustekinumab and Anser™ADA for adalimumab). These tests measure antidrug antibodies in the presence of detectable drug levels, improving upon a major limitation of the ELISA method. These tests measure serum concentrations and antidrug antibodies. The detection and quantitative measurement of antidrug antibodies has historically been difficult to establish.

**INDICATIONS:**

1. Drug and/or antibody concentration testing for anti-tumor necrosis factor (anti-TNF) therapies in members with inflammatory bowel disease is considered medically necessary in the following situations:

- a. At the end of induction for all anti-TNFs
- b. At least once during maintenance therapy
- c. At the end of induction in primary non-responders
- d. In members with confirmed secondary loss of response

2. Drug and/or antibody concentration testing for vedolizumab or ustekinumab therapies in members with inflammatory bowel disease is considered medically necessary in the following situations:

- a. In non-responders at the end of induction
- b. In members with confirmed secondary loss of response

**EXCLUSIONS:** Measurement of serum concentrations and/or antibodies to adalimumab (Humira), certolizumab (Cimzia); etanercept (Enbrel); golimumab (Simponi) either alone or as a combination test for any other reason not listed under Indications is considered experimental, investigational or unproven or is **NOT COVERED**.

**Medicaid Business Segment:**

Coverage may be considered on a per-case basis through a Program Exception

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:** Measurement of Serum Antibodies to Infliximab, Vedolizumab and Adalimumab *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](http://www.cms.gov) or the local Medicare Administrative Carrier (MAC) for more information on Medicare coverage and coding requirements.*

- 80145 Adalimumab
- 80230 Infliximab
- 80280 Vedolizumab
- 82397 chemoluminescent assay
- 80299 Quantitation of therapeutic drug, not elsewhere specified [when specified as measurement of serum concentrations of monoclonal antibody (MAB) drugs, with associated chemiluminescent assay (82397)]
- 84999 Unlisted chemistry procedure

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:**

- Steenholdt C, Bendtzen K, Brynskov J et al. Cut-off levels and diagnostic accuracy of infliximab trough levels and anti-infliximab antibodies in Crohn's disease. *Scand J Gastroenterol* 2011; 46(3):310-8.
- Dubeau MF, Ghosh S. Optimizing infliximab therapy for inflammatory bowel disease- the tools are getting sharper. *Gastroenterol Hepatol* 2012; 8(2):134-6.
- Finckh A, Dudler J, Wermelinger F et al. Influence of anti-infliximab antibodies and residual infliximab concentrations on the occurrence of acquired drug resistance to infliximab in rheumatoid arthritis patients. *Joint Bone Spine* 2010; 77(4):313-8.
- Wang SL, Hauenstein S, Ohrmund L et al. Monitoring of adalimumab and antibodies-to-adalimumab levels in patient serum by the homogeneous mobility shift assay. *J Pharm Biomed Anal.* 2013; 78-79:39-44.
- Nanda KS, Cheifetz AS, Moss AC. Impact of antibodies to infliximab on clinical outcomes and serum infliximab levels in patients with inflammatory bowel disease (IBD): a meta-analysis. *Am J Gastroenterol.* 2013; 108(1):40-7;
- Bartelds GM, Krieckaert CM, Nurmohamed MT et al. Development of antidrug antibodies against adalimumab and association with disease activity and treatment failure during long-term follow-up. *JAMA.* 2011; 305(14):1460-68.
- Kevans D, et al. Serological markers associated with disease behavior and response to anti-tumor necrosis factor therapy in ulcerative colitis. *J Gastroenterol Hepatol* 2015 Jan;30(1):64-70.
- Meroni PL, et al. New strategies to address the pharmacodynamics and pharmacokinetics of tumor necrosis factor (TNF) inhibitors: a systematic analysis. *Autoimmun Rev* 2015 Sep;14(9):812-29.
- Steenholdt C, et al. Clinical implications of measuring drug and anti-drug antibodies by different assays when optimizing infliximab treatment failure in Crohn's disease: post hoc analysis of a randomized controlled trial. *Am J Gastroenterol* 2014 Jul;109(7):1055-64
- Benucci M, et al. Antidrug antibodies against TNF-blocking agents; correlations between disease activity, hypersensitivity reactions, and different classes of immunoglobulins. *Biologics* 2015 Feb 17;9:7-12.
- Frederiksen MT, et al. Antibodies against infliximab are associated with de novo development of antibodies to adalimumab and therapeutic failure in infliximab-to adalimumab switchers with IBD. *Inflamm Bowel Dis* 2014 Oct;20(10):1714-21
- Vande Casteele N, et al. Pharmacokinetics of anti-TNF monoclonal antibodies in inflammatory bowel disease: adding value to current practice. *J Clin Pharmacol* 2015 Mar;55(Suppl3):S39-50
- Yanai H, Lichtenstein L, Assa A, et al. Levels of drug and antidrug antibodies are associated with outcome of interventions after loss of response to infliximab or adalimumab. *Clin Gastroenterol Hepatol.* 2015; 13(3):522-530.
- Ungar B, Levy I, Yavne Y, et al. Optimizing anti-TNF- $\alpha$  therapy: serum levels of infliximab and adalimumab are associated with mucosal healing in patients with inflammatory bowel diseases. *Clin Gastroenterol Hepatol.* 2016; 14(4):550-557
- Merras-Salmio L, Kolho KL. Clinical use of infliximab trough levels and antibodies to infliximab in pediatric inflammatory bowel disease patients. *J Pediatr Gastroenterol Nutr.* 2016 May 2.
- Hayes Inc. Anser VDZ (Prometheus Laboratories) for Monitoring Vedolizumab Treatment of Crohn's Disease. April 6, 2017.
- Boland B, Dulai P, et al. Association of vedolizumab concentrations using anser: Mobility shift assay and clinical response in IBD patients in clinical practice. *American Journal of Gastroenterology.* 2016;111 Supplement 1:S275-S276

Pecoraro V, De Santis E, Melegari A, et al. The impact of immunogenicity of TNFalpha inhibitors in autoimmune inflammatory disease. A systematic review and meta-analysis. *Autoimmun Rev.* Jun 2017;16(6):564-575

Nencini F, et al. The kinetics and antidrug antibodies, drug levels, and clinical outcomes in infliximab-exposed patients with immune-mediated disorders. *J Allergy Clin Immunol Pract* 2018 Nov-Dec;6(6):2065-2072

Chui HY, Chu TW, Cheng YP, et. al. The association between clinical response to ustekinumab and immunogenicity to ustekinumab and prior adalimumab. *PLoS One* 2015 Nov 13;10(11):e0142930

Feuerstein JD, Nguyen GC, Kupfer SS, et al. American Gastroenterological Association Institute Guideline on therapeutic drug monitoring in inflammatory bowel disease. *Gastroenterology.* Sep 2017;153(3):827-834

Papamichael K, Vajravelu RK, Osterman MT, Cheifetz AS. Long-term outcome of infliximab optimization for overcoming immunogenicity in patients with inflammatory bowel disease. *Dig Dis Sci.* 2018;63(3):761-767

Papamichael K, Juncadella A, Wong D, et al. Proactive therapeutic drug monitoring of adalimumab is associated with better long-term outcomes compared to standard of care in patients with inflammatory bowel disease. *J Crohns Colitis.* 2019;13(8):976-981

Papamichail K, Clarke WT, Castele NV, et al. Comparison of assays for therapeutic monitoring of infliximab and adalimumab in patients with inflammatory bowel diseases. *Clin Gastroenterol Hepatol.* 2020;S1542-3565(20):30273-30271

Greuter T, Maillard MH, et al. Therapeutic Drug Monitoring to Guide Clinical Decision Making in Inflammatory Bowel Disease Patients with Loss of Response to Anti-TNF: A Delphi Technique-Based Consensus. *Digestion* 2020;101:683–691.

Shukla R, et al. Therapeutic Drug Monitoring on Non-Anti Tumor Necrosis Factor Biologics. *Clinical Gastroenterology and Hepatology.* 2021;19(6):P1108-1110.

Nassar-Sheikh Rashid A, et al. Therapeutic drug monitoring of anti-TNF drugs: an overview of applicability in daily clinical practice in the era of treatment with biologics in juvenile idiopathic arthritis (JIA). *Pediatric Rheumatology* 2021;19(59).

UptoDate. Treatment of Crohn disease in adults: Dosing and monitoring of tumor necrosis factor-alpha inhibitors. Aug 06, 2021.

Lyles JL, Mulgund AA, et al. Effect of a Practice-wide Anti-TNF Proactive Therapeutic Drug Monitoring Program on Outcomes in Pediatric Patients with Inflammatory Bowel Disease. *Inflamm Bowel Dis* 2021;27(4):482-492.

Syversen SW, Goll GL, et al. Effect of Therapeutic Drug Monitoring vs Standard Therapy During Infliximab Induction on Disease Remission in Patients With Chronic Immune-Mediated Inflammatory Diseases. A Randomized Clinical Trial. *JAMA.* 2021;325(17):1744–1754.

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

**Devised:** 5/15

**Revised:** 5/18(add Anser VDZ exclusion); 1/20 (clarify description and exclusion); 6/20 (add exclusion, revise title); 1/22 (add coverage indications)

**Reviewed:** 5/16, 10/17, 5/19. 6/21, 3/23

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.

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.