

Overview

Useful For

Assessing the response to therapy with vedolizumab

An aid to achieving desired trough serum concentration of vedolizumab

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
VEMAB	Vedolizumab Ab, S	No	No

Testing Algorithm

Vedolizumab quantitation will be performed by liquid chromatography-mass spectrometry on all samples. When this test is ordered and vedolizumab results are 15.0 mcg/mL or less, then testing for antibodies to vedolizumab will be performed at an additional charge.

This test includes vedolizumab drug quantitation and, if appropriate, antibody testing for antibodies-to-vedolizumab will be performed. Currently, the American Gastroenterology Association does not have a formal guideline on optimal thresholds for vedolizumab trough concentrations in the setting of loss of response to therapy, but trough concentrations greater than 12 mcg/mL to 15 mcg/mL have been associated with clinical or endoscopic remission and mucosal healing in inflammatory bowel disease.

For more information see [Ulcerative Colitis and Crohn Disease Therapeutic Drug Monitoring Algorithm](#).

Special Instructions

- [Ulcerative Colitis and Crohn Disease Therapeutic Drug Monitoring Algorithm](#)

Method Name

VEDOL: Liquid Chromatography-Mass Spectrometry (LC-MS/MS)

VEMAB: Electrochemiluminescent Bridging Immunoassay

NY State Available

Yes

Specimen

Specimen Type

Serum

Ordering Guidance

If both quantitation and antibody testing are needed, regardless of the quantitation results, order VEDOZ / Vedolizumab Quantitation with Antibodies, Serum.

Specimen Required

Patient Preparation:

- 1. For 12 hours before specimen collection, patient **should not** take multivitamins or dietary supplements (eg, hair, skin, and nail supplements) containing biotin (vitamin B7).
- 2. Nivolumab (Opdivo) must be discontinued at least 4 weeks prior to testing for vedolizumab quantitation in serum.

Collection Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Submission Container/Tube: Plastic vial

Specimen Volume: 1.5 mL

Collection Instructions:

- 1. Draw blood immediately before next scheduled dose (trough specimen).
- 2. Centrifuge and aliquot serum into a plastic vial within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send 1 of the following with the specimen:

[-Gastroenterology and Hepatology Test Request](#) (T728)

[-Therapeutics Test Request](#) (T831)

Specimen Minimum Volume

0.3 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	28 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Vedolizumab (Entyvio) is a humanized IgG1 kappa monoclonal antibody directed against integrin alpha-4 beta-7.

Blocking the alpha-4 beta-7 integrin results in a gut-selective anti-inflammatory response.(1) The drug is US Food and Drug Administration approved for the treatment of adult patients with moderately to severely active ulcerative colitis or Crohn disease. The main indication for therapeutic drug monitoring of vedolizumab is in the setting of primary nonresponse or loss-of-response to therapy, also called reactive monitoring.(2-10) Vedolizumab trough concentrations greater than 12 mcg/mL to 15 mcg/mL have been associated with clinical or endoscopic remission.(3,5,11) Proactive monitoring of vedolizumab concentrations has been proposed, but there is not sufficient data to support routine proactive testing at this time.

Therapeutic drug monitoring of biologics is usually carried out by measuring the monoclonal antibody therapy concentration and assessing its immunogenicity or the appearance of anti-drug antibodies. Some patients on vedolizumab may develop antibodies to vedolizumab (ATV) over time. In clinical trials, approximately 4% of patients treated with vedolizumab were positive for ATV at any time and 1% or less were persistently positive. Clinically significant ATV impact drug clearance and a positive ATV is associated with lower trough concentrations of vedolizumab.

**Reference Values**

VEDOLIZUMAB QUANTITATION:

Vedolizumab lower limit of quantitation: 2.0 mcg/mL

VEDOLIZUMAB ANTIBODIES:

Antibodies to vedolizumab: <9.8 ng/mL

**Interpretation**

The limit of quantitation of the test is 2.0 mcg/mL. In a retrospective Mayo Clinic study with 171 patients (62% Crohn disease, 31% ulcerative colitis, and 7% indeterminate colitis), the median vedolizumab trough concentration was 15.3 mcg/mL.(11) Trough (immediately before next infusion) therapeutic concentrations of vedolizumab are expected to be above 15 mcg/mL.

Vedolizumab concentration greater than 15 mcg/mL at trough is associated with clinical remission, endoscopic remission, or mucosal healing in inflammatory bowel disease.

Clinically significant antibodies-to-vedolizumab impact drug clearance and are associated with low (< or =15 mcg/mL at trough) or undetectable vedolizumab concentration.

**Cautions**

Patients actively undergoing therapy with both vedolizumab and nivolumab (rare scenario) should not have their therapeutic vedolizumab concentration assessed using this test. If the patient has taken nivolumab in the past, they should wait for 4 weeks after therapy with nivolumab has ended before being tested for vedolizumab quantitation using this method.

The presence of high concentrations of vedolizumab might inhibit the antibodies to vedolizumab (ATV) assay yielding false-negative results. In patients with concentrations of vedolizumab greater than 15.0 mcg/mL, the presence of an ATV is of little clinical significance.

Samples containing more than 100 ng/mL biotin (vitamin B7) may interfere (in the form of depressed signal) with VEMAB / Vedolizumab Antibodies, Serum.

Clinical management decisions for patients receiving vedolizumab treatment should not be based solely on quantitation of vedolizumab and assessment of ATV if appropriate. Test results must be interpreted within the clinical context of the patient.

**Clinical Reference**

1. Feagan BG, Rutgeerts P, Sands BE, et al. Vedolizumab as induction and maintenance therapy for ulcerative colitis. *N Engl J Med*. 2013;369:699-710
2. Williet N, Boschetti G, Fovet M, et al. Association between low trough levels of vedolizumab during induction therapy for inflammatory bowel diseases and need for additional doses within 6 months. *Clin Gastroenterol Hepatol*. 2017;15(11):1750-1757.e3
3. Dreesen E, Verstockt B, Bian S, et al. Evidence to support monitoring of vedolizumab trough concentrations in patients with inflammatory bowel diseases. *Clin Gastroenterol Hepatol*. 2018;16(12):1937-1946 e8
4. Ungar B, Kopylov U, Yavzori M, et al. Association of vedolizumab level, anti-drug antibodies, and alpha4beta7 occupancy with response in patients with inflammatory bowel diseases. *Clin Gastroenterol Hepatol*. 2018;16(5):697-705.e7
5. Ward MG, Sparrow MP, Roblin X. Therapeutic drug monitoring of vedolizumab in inflammatory bowel disease: Current data and future directions. *Therap Adv Gastroenterol*. 2018;11:1756284818772786
6. Pouillon L, Rousseau H, Busby-Venner H, et al. Vedolizumab trough levels and histological healing during maintenance therapy in ulcerative colitis. *J Crohns Colitis*. 2019;13(8):970-975
7. Pouillon L, Vermeire S, Bossuyt P. Vedolizumab trough level monitoring in inflammatory bowel disease: A state-of-the-art overview. *BMC Med*. 2019;17(1):89
8. Singh S, Dulai PS, Vande Casteele N, et al. Systematic review with meta-analysis: Association between vedolizumab trough concentration and clinical outcomes in patients with inflammatory bowel diseases. *Aliment Pharmacol Ther*. 2019;50(8):848-857
9. Ungaro RC, Yarur A, Jossen J, et al. Higher trough vedolizumab concentrations during maintenance therapy are associated with corticosteroid-free remission in inflammatory bowel disease. *J Crohns Colitis*. 2019;13(8):963-969
10. Yarur AJ, Bruss A, Naik S, et al. Vedolizumab concentrations are associated with long-term endoscopic remission in patients with inflammatory bowel diseases. *Dig Dis Sci*. 2019;64(6):1651-1659
11. Al-Bawardy B, Ramos GP, Willrich MAV, et al. Vedolizumab drug level correlation with clinical remission, biomarker normalization, and mucosal healing in inflammatory bowel disease. *Inflamm Bowel Dis*. 2019;21;25(3):580-586

**Performance****Method Description**

Vedolizumab Quantitation:

Vedolizumab is extracted from serum and measured by liquid chromatography (high-resolution accurate-mass, HRAM) mass spectrometry.(Cradic KW, Ladwig PM, Rivard AL, Katrangi W, Wintgens KF, Willrich MAV. Vedolizumab quantitation using high-resolution accurate mass-mass spectrometry middle-up protein subunit: Method validation. *Clin Chem Lab Med*. 2020;58[6]:864-872)

Vedolizumab Antibodies:

Testing for antibodies to vedolizumab is carried out using a laboratory-developed immunoassay on an electrochemiluminescence (Mesoscale Discovery) platform.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday, Wednesday, Thursday

Report Available

5 to 7 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Fees

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact [Customer Service](#).

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

80280  
82397 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
VEDOL	Vedolizumab QN, S	90805-3

Result ID	Test Result Name	Result LOINC® Value
602807	Vedolizumab QN, S	90805-3