MAYO CLINIC LABORATORIES

Test Definition: VEDOZ

Vedolizumab Quantitation with Antibodies, Serum

Overview

Useful For

Assessing for primary or secondary loss of response to therapy with vedolizumab

An aid to achieving desired serum concentrations of vedolizumab

Profile Information

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

Testing Algorithm

When this test is ordered, vedolizumab quantitation and testing for antibodies to vedolizumab will always be performed.

This test includes both quantitation and antibody testing on all specimens. The therapeutic thresholds for vedolizumab and optimal concentrations associated with good outcomes are not well established. Currently the American Gastroenterology Association does not have a formal guideline on optimal thresholds for vedolizumab.

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 there is a known justification for performing both quantitation and antibody levels, this is the correct test to order. If

there is not a known reason to perform the antibodies component, consider VEDOL / Vedolizumab Quantitation with Reflex to Antibodies, Serum. VEDOL testing begins with vedolizumab quantitation When the quantitation results are 15.0 mcg/mL or less, testing for antibodies to vedolizumab will be performed.

Specimen Required

Patient Preparation:

1. **For 12 hours before specimen collection do not** take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.
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.

Samples containing more than 100 ng/mL biotin (vitamin B7) may interfere with ATV (in the form of depressed signal) for 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. 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;22(69)8;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;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)

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PDF Report
No

Day(s) Performed
Vedolizumab Quantitation: Monday, Wednesday, Thursday
Vedolizumab Antibodies: Tuesday, Friday

Report Available
5 to 8 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

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
VEDOZ	Vedolizumab QN with Antibodies, S	90794-9

Result ID	Test Result Name	Result LOINC® Value
602807	Vedolizumab QN, S	90805-3
603298	Vedolizumab Ab, S	86899-2
603299	VEMAB Interpretation	59462-2