MAYO CLINIC LABORATORIES

Test Definition: DIMER

D-Dimer, P

Overview

Useful For

Diagnosis of intravascular coagulation and fibrinolysis (ICF), also known as disseminated intravascular coagulation (DIC), especially when combined with clinical information and other laboratory test data (eg, platelet count, assays of clottable fibrinogen and soluble fibrin monomer complex, and clotting time assays-prothrombin time and activated partial thromboplastin time)

Exclusion of the diagnosis of acute pulmonary embolism or deep vein thrombosis, particularly when results of a sensitive D-dimer assay are combined with clinical information, including pretest disease probability

Method Name

Only orderable as part of a profile or reflex. For more information see:

ALBLD / Bleeding Diathesis Profile, Limited, Plasma

AATHR / Thrombophilia Profile, Plasma

APROL / Prolonged Clot Time Profile, Plasma

ADIC / Disseminated Intravascular Coagulation/Intravascular Coagulation and Fibrinolysis (DIC/ICF) Profile, Plasma

ALUPP / Lupus Anticoagulant Profile, Plasma

Latex Immunoassay (LIA)

NY State Available

Yes

Specimen

Specimen Type

Plasma Na Cit

Specimen Required

Only orderable as part of a profile or reflex. For more information see:

ALBLD / Bleeding Diathesis Profile, Limited, Plasma

AATHR / Thrombophilia Profile, Plasma

APROL / Prolonged Clot Time Profile, Plasma

ADIC / Disseminated Intravascular Coagulation/Intravascular Coagulation and Fibrinolysis (DIC/ICF) Profile, Plasma

ALUPP / Lupus Anticoagulant Profile, Plasma

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma Na Cit	Frozen (preferred)	14 days	

Clinical & Interpretive

Clinical Information

Thrombin, the terminal enzyme of the plasma procoagulant cascade, cleaves fibrinopeptides A and B from fibrinogen, generating fibrin monomer. Fibrin monomer contains D domains on each end of the molecule and a central E domain. Most of the fibrin monomers polymerize to form insoluble fibrin, or the fibrin clot, by repetitive end-to-end alignment of the D domains of 2 adjacent molecules in lateral contact with the E domain of a third molecule. The fibrin clot is subsequently stabilized by thrombin-activated factor XIII, which covalently cross-links fibrin monomers by transamidation, including dimerization of the D domains of adjacently polymerized fibrin monomers. The fibrin clot promotes activation of fibrinolysis by catalyzing the activation of plasminogen (by plasminogen activators) to form plasmin enzyme. Plasmin proteolytically degrades cross-linked fibrin, ultimately producing soluble fibrin degradation products of various sizes that include cross-linked fragments containing neoantigenic D-dimer (DD) epitopes.

Plasmin also degrades fibrinogen to form fragments X,Y, D, and E. D-dimer immunoassays use monoclonal antibodies to DD neoantigen and mainly detect cross-linked fibrin degradation products, whereas the fibrino(geno)lytic degradation products-X, Y, D, and E, and their polymers may be derived from fibrinogen or fibrin. Therefore, the blood content of D-dimer indirectly reflects the generation of thrombin and plasmin, roughly indicating the turnover or activation state of the coupled blood procoagulant and fibrinolytic mechanisms.(1)

Reference Values

Only orderable as part of a profile or reflex. For more information see:

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AATHR / Thrombophilia Profile, Plasma

APROL / Prolonged Clot Time Profile, Plasma

ADIC / Disseminated Intravascular Coagulation/Intravascular Coagulation and Fibrinolysis (DIC/ICF) Profile, Plasma

ALUPP / Lupus Anticoagulant Profile, Plasma

< or =500 ng/mL Fibrinogen Equivalent Units (FEU)

D-dimer values < or =500 ng/mL FEU may be used in conjunction with clinical pretest probability to exclude deep vein thrombosis (DVT) and pulmonary embolism (PE).

Interpretation

D-dimer values < or =500 ng/mL fibrinogen-equivalent units (FEU) are normal. Within the reportable normal range (220-500 ng/mL FEU), measured values may reflect the activation state of the procoagulant and fibrinolytic systems, but the clinical utility of such quantitation is not established.

A normal D-dimer result (< or =500 ng/mL FEU) has a negative predictive value of approximately 95% for the exclusion of acute pulmonary embolism (PE) or deep vein thrombosis when there is low or moderate pretest PE probability.

Increased D-dimer values are abnormal but do not indicate a specific disease state. D-dimer values may be increased as a result of:

-Clinical or subclinical disseminated intravascular coagulopathy (DIC)/intravascular coagulation and fibrinolysis (ICF).

-Other conditions associated with increased activation of the procoagulant and fibrinolytic mechanisms such as recent surgery, active or recent bleeding, hematomas, trauma, or thromboembolism.

-Association with pregnancy, liver disease, inflammation, malignancy or hypercoagulable (procoagulant) states.

The degree of D-dimer increase does not definitely correlate with the clinical severity of associated disease states.

Cautions

Lipemia can interfere with this assay, causing an overestimation of the D-dimer level. Therefore, results from lipemic specimens should be interpreted with caution.

The presence of rheumatoid factor at a level above 50 IU/mL may lead to an overestimation of the D-dimer level.

Clinical Reference

1. Legnani C, Cini M, Scarvelis D, et al: Multicenter evaluation of a new quantitative highly sensitive D-dimer assay, the HemosIL D-dimer HS 500, in patients with clinically suspected venous thromboembolism. Thromb Res 2010;125(5):398-401

2. Levi M, Ten Cate H: Disseminated intravascular coagulation. N Engl J Med 1999 Aug;341(8):586-592

3. Brill-Edward P, Lee A: D-dimer testing in the diagnosis of acute venous thromboembolism. Thromb Haemost 1999 Aug;82(2):688-694

Performance

Method Description

The D-dimer assay is performed using the HemosIL D-Dimer HS 500 kit on the Instrumentation Laboratory ACL TOP instrument. D-dimer is assayed in plasma by adding polystyrene latex particles coated with monoclonal antibodies specific for D-dimer domain. The latex particles agglutinate in the presence of soluble fibrin degradation products (FDP) containing the D-dimer domain. The degree of agglutination is directly proportional to the concentration of D-dimer in the sample and is determined by measuring the decrease of transmitted light caused by the aggregates (turbidimetric immunoassay).(Package insert: HemosIL D-Dimer HS 500. Instrumentation Laboratory Company, Bedford, MA 2/2017)

PDF Report

No

Specimen Retention Time

7 days

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per

manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

85379

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
DIMER	D-Dimer, P	48067-3

Result ID	Reporting Name	LOINC®
DIMER	D-Dimer, P	48067-3