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MAYO CLINIC LABORATORIES

Test Definition: C2AD2

PrecivityAD2, Plasma

Overview

Useful For

Assisting in the evaluation of adult patients, aged 50 years and older, with signs or symptoms of mild cognitive impairment or dementia who are being assessed for Alzheimer disease and other causes of cognitive decline

This is **not intended for** patients younger than 50 years, or for use as a screening test in patients without signs or symptoms of cognitive impairment, or for serial testing for assessment of longitudinal changes.

Highlights

The PrecivityAD2 blood test measures amyloid beta (Abeta) 42/40 ratio and percent tau phosphorylated at threonine-217 (%p-tau217). The results are then combined and used in a proprietary statistical algorithm to calculate the Amyloid Probability Score 2 (APS2). The APS2, Abeta 42/40 ratio and %p-tau217 are reported, however, individual Abeta42, Abeta40, phosphorylated tau217 and non-phosphorylated tau217 concentrations are not reported.

Method Name

Immunoprecipitation/Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)

NY State Available

Yes

Specimen

Specimen Type

Plasma

Ordering Guidance

This blood test is intended for use in patients aged 50 and older with signs or symptoms of mild cognitive impairment or dementia who are undergoing evaluation for Alzheimer disease or other forms of cognitive decline.

Shipping Instructions

1. Specimens must be shipped frozen on dry ice.
2. Place labeled aliquot tubes inside a larger tube or vial for transport.

Specimen Required

Supplies: Screw cap micro tube, 2 mL, PCR Performance Tested, Low protein-binding (T983)
Collection Container/Tube: 10 mL Purple top (K EDTA)
Submission Container/Tube: Two 2-mL screw cap micro tubes
Specimen Volume: 3 mL in 2 tubes, each containing 1.5 mL
Collection Instructions:
1. Centrifuge within two hours of collection.
2. Label two 2-mL screw-cap micro tubes.

3. Aliquot 1.5 mL of plasma into each labeled micro tube.
4. Freeze plasma (no longer than 2 hours after collection) at or below -20 degrees C.

Forms

If not ordering electronically, complete, print, and send a Neurology Specialty Testing Client Test Request (T732) with the specimen.

Specimen Minimum Volume

See Specimen Required

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject
Outside of age range Specimen collected outside of testing range (too long in storage before arrival to testing facility) Insufficient volume Incorrect labeling	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma	Frozen		

Clinical & Interpretive

Clinical Information

Alzheimer disease (AD) is defined pathologically by the presence of amyloid plaques and neurofibrillary tangles in the brain. Clinical characteristics include gradual onset of mild cognitive impairment (MCI), behavioral changes such as apathy, withdrawal, or agitation, and disease progression to middle and later stage dementia.(1,2) Currently, no test detects AD with 100% accuracy; definitive diagnosis occurs at brain autopsy.

Recent availability of anti-amyloid therapies increases the importance of detection of AD at an early stage.(3-5) MCI impacts 12% to 18% of people in the United States over age 60 and is often an initial clinical sign of AD.(6) Establishing or excluding an AD diagnosis with a high degree of certainty at first signs of memory decline may optimize medical management.

Brain amyloid pathology is detectable by amyloid positron emission tomography (PET) scan, cerebrospinal fluid testing, or liquid chromatography tandem mass spectrometry blood biomarker testing with high sensitivity and specificity in patients with MCI and early dementia.(7-12) In all testing modalities, healthcare providers interpret test results in the context of the patient's clinical findings and other clinical work-up, as the neuropathological changes associated with AD can be seen in other forms of dementia and in unaffected individuals.(7,8,13)

The PrecivityAD2 test is an analytically and clinically validated blood test that aids healthcare professionals in ruling in or ruling out AD in patients presenting with MCI or dementia. This evaluation simultaneously quantifies specific plasma amyloid beta (Abeta) and tau peptide concentrations to calculate the Abeta42/40 ratio and percent tau phosphorylated at threonine-217 (%p-tau217).(12) The inclusion of plasma analyte ratios has been shown to mitigate the effects of confounding factors such as chronic kidney disease.(14,15) The ratios are combined into a proprietary statistical algorithm to calculate the Amyloid Probability Score 2 (APS2), a numerical value ranging from 0 to100 that determines whether a patient is positive (has high likelihood) or negative (has low likelihood) for the presence of brain amyloid plaques by amyloid PET scan.

Reference Values

Amyloid Probability Score 2 (APS2) (range of 0-100):
Negative: 0-47
Positive: 48-100

Abeta42/40 Ratio:
> or =0.095 Consistent with absence of amyloid plaques

Percent p-tau217:
<4.2% consistent with absence of brain amyloid plaques

Interpretation

The Amyloid Probability Score 2 (APS2) result is a composite score ranging from 0 to 100 that demonstrates the strongest correlation with brain amyloid pathology compared to the individual biomarkers (amyloid beta [Abeta] 42/40 ratio or percent tau phosphorylated at threonine-217 [%p-tau217]) considered separately. Discordance of the individual biomarkers can occur.

Table. Amyloid Probability Score and Interpretation

APS2		**Interpretation**
0-47	Negative	Consistent with a negative amyloid positron emission tomography (PET) scan; reflects a low likelihood of brain amyloid plaques and is therefore not consistent with a neuropathological diagnosis of Alzheimer disease (AD).
48-100	Positive	Consistent with a positive amyloid PET scan; reflects a high likelihood of brain amyloid plaques, one of the

		neuropathological findings of AD.

The APS2 result should be interpreted in conjunction with other patient information. Clinical correlation is recommended.

Cautions

This test is not a standalone test; Positive or negative APS2 values alone neither rule in nor rule out a diagnosis of Alzheimer disease (AD).

Test results should be used in conjunction with other diagnostic tools, such as neurological examination, neurobehavioral tests, imaging, and routine laboratory tests.

False-positive and false-negative test results may occur.

This test uses interpretive data that were derived from clinical studies in a predominantly White US population of patients with mild cognitive impairment or early dementia. The extent of the differences in results (if any) based on individuals of other racial and ethnic groups has not yet been firmly established.

Currently, there is insufficient evidence to support serial testing for the assessment of longitudinal changes in biomarkers, including monitoring response to therapy.

The results of other analyte tests using other methodologies cannot be interpreted in the context of the PrecivityAD2 test.

Clinical Reference

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Performance

Method Description
Plasma specimens undergo immunoprecipitation followed by liquid chromatography tandem mass spectrometry (LC-MS/MS) for the quantification of amyloid beta (Abeta) 42 and Abeta 40 peptide isoform concentrations and phosphorylated and non-phosphorylated tau at amino acid threonine, position 217 (p-tau271 and np-tau217) peptide concentrations. The percent tau phosphorylated at threonine-217 (%p-tau217) is calculated using the following equation: p-tau271/np-tau217*100. A statistical algorithm combines the Abeta42/40 and %p-tau217 to generate the Amyloid Probability Score 2 (APS2).(Meyer MR, Kirmess KM, Eastwood S, et al. Clinical validation of the PrecivityAD2 blood test: A mass spectrometry-based test with algorithm combining %p-tau217 and Abeta42/40 ratio to identify presence of brain amyloid. Alzheimers Dement.2024;20[5]:3179-3192. doi:10.1002/alz.13764)

PDF Report
No

Day(s) Performed
Monday through Friday

Report Available
13 days post sample receipt from MCL

Specimen Retention Time
60 days

Performing Laboratory Location

C2N Diagnostics LLC

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

C2N Diagnostics has developed and determined the analytical and clinical validity performance characteristics of this Laboratory Developed Test (LDT). This assay has been validated pursuant to CLIA regulations and is used for clinical purposes. This assay has not been cleared or approved by the FDA.

CPT Code Information

0503U

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
C2AD2	PrecivityAD2	Not Provided

Result ID	Test Result Name	Result LOINC® Value
AD2C	Amyloid Probability Score 2 (APS2)	Not Provided
AD2D	APS2 Result Interpretation	Not Provided
AD2E	APS2 Result Reference Interval	Not Provided
AD2F	APS2 Description	Not Provided
AD2G	Percent p-tau217	Not Provided
AD2H	Percent p-tau217 Reference Interval	Not Provided
AD2I	Abeta42/40 Ratio	Not Provided
AD2J	Abeta42/40 Ratio Reference Interval	Not Provided
AD2K	Test Description	Not Provided
AD2L	Limitations of Test Result	Not Provided
AD2M	Methods and Assay Category	Not Provided
AD2N	References	Not Provided
AD2O	Report Comment	Not Provided
AD2P	Performing Site	Not Provided
AD2CF	APS2 Result	Not Provided
AD2HD	Percent p-tau217 Description	Not Provided
AD2JD	Abeta42/40 Ratio Description	Not Provided