MAYO CLINIC LABORATORIES

Test Definition: TLB

Thallium, Blood

Overview

Useful For
Detecting toxic exposure using whole blood specimens

Special Instructions
- Metals Analysis Specimen Collection and Transport

Method Name
Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

NY State Available
Yes

Specimen

Specimen Type
Whole blood

Specimen Required
This specimen container cannot be opened or used for any other testing before shipping.
Patient Preparation: High concentrations of gadolinium and iodine are known to potentially interfere with most inductively coupled plasma mass spectrometry-based metal tests. If either gadolinium- or iodine-containing contrast media has been administered, **a specimen should not be collected for 96 hours**.
Supplies:
-Metal Free EDTA 3 mL Tube (T989)
-Metal Free B-D Tube (EDTA), 6 mL (T183)
Container/Tube:
Preferred: Royal blue-top BD Vacutainer with EDTA blood collection tube (3 mL) (BD catalog no. 367777) (T989)
Acceptable: Royal blue-top BD Vacutainer Plus with EDTA blood collection tube (6 mL) (BD catalog no. 368381) (T183)
Specimen Volume: 1 mL
Collection Instructions:
1. See Metals Analysis Specimen Collection and Transport for complete instructions.
2. Send specimen in original tube. **Do not aliquot.**

Specimen Minimum Volume
0.3 mL

Reject Due To

Gross	OK

hemolysis	
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole blood	Refrigerated (preferred)	28 days	
	Ambient	28 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Thallium is odorless, tasteless and found in trace amounts in the earth's crust. It is used in the manufacturing of electronic devices, switches, and closures. It had previously been used in rodenticides. The greatest exposure can occur from eating food (eg, fruits and vegetables) since it is easily taken up by plants through the roots. Cigarette smoking is also a source of exposure. Accidental ingestion may lead to vomiting, diarrhea, and leg pains, followed by severe and sometimes fatal sensorimotor polyneuropathy. Peripheral neuropathy may occur within 1 week of exposure, while hair loss begins and continues for several weeks. Gastrointestinal symptoms, including pain, diarrhea, and constipation have also been reported in acute ingestion, along with myalgias, pleuritic chest pain, insomnia, optic neuritis, hypertension, cardiac abnormalities, Mees lines, and liver injury. Most thallium is excreted in the urine, can be found within an hour after exposure, and can be detected as long as two months after exposure.

Reference Values

0-17 years: Not established
> or =18 years: <2 ng/mL

Interpretation

Normal thallium blood concentrations are less than 1 ng/mL.

Significant exposure is associated with thallium blood concentrations greater than 10 ng/mL and as high as 50 ng/mL. The long-term consequences from such exposure are poor.

Patients exposed to high doses of thallium (>1 g) present clinically with alopecia (hair loss), peripheral neuropathy, seizures, and kidney failure

Cautions

No significant cautionary statements

Clinical Reference

1. Pelcloval D, Urbanl, P, Ridsonl P, et al. Two-year follow-up of two patients after severe thallium intoxication. Hum Exper Toxicol. 2009;28(5):263-272
2. Zhao G, Ding M, Zhang B, et al. Clinical manifestations and management of acute thallium poisoning. Eur Neurol.

2008;60(6):292-297
3. Agency for Toxic Substances and Disease Registry: Toxicological profile for thallium. US Department of Health and Human Services; October 2024. Accessed September 5, 2025. Available at https://atsdr.cdc.gov/ToxProfiles/tp54.pdf
4. Strathmann FG, Blum LM. Toxic elements. In: Rifai N, Chiu RWK, Young I, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:455.e55
5. Zavaliy LB, Petrikov SS, Simonova AY, et al. Diagnosis and treatment of persons with acute thallium poisoning. Toxicol Rep. 2021;8:277-281

Performance

Method Description
The metal of interest is analyzed by inductively coupled plasma mass spectrometry.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Tuesday, Friday

Report Available
2 to 5 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
83018

Test Definition: TLB

Thallium, Blood

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
TLB	Thallium, B	5743-0

Result ID	Test Result Name	Result LOINC® Value
8149	Thallium, B	5743-0