

Overview**Useful For**

Detecting toxic thallium exposure in whole blood specimens

Special Instructions

- [Trace Metals Analysis Specimen Collection and Transport](#)

Method Name

InductivelyCoupledPlasma-MassSpectrometry(ICP-MS)

NY State Available

Yes

Specimen**Specimen Type**

Whole blood

Specimen Required

Patient Preparation: High concentrations of gadolinium and iodine are known to interfere with most metals tests. If either gadolinium- or iodine-containing contrast media has been administered, a specimen should not be collected for 96 hours.

Supplies: Metal Free B-D Tube (EDTA), 6 mL (T183)

Container/Tube: Royal blue-top (EDTA) Vacutainer plastic trace element blood collection tube (T183)

Specimen Volume: Full tube

Collection Instructions:

1. See [Trace Metals Analysis Specimen Collection and Transport](#) in Special Instructions for complete instructions.
2. Send specimen in original tube.

Additional Information: If ordering the trace element blood collection tube from BD, order catalog #368381.

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
Whole blood	Refrigerated (preferred)	28 days	
	Ambient	28 days	
	Frozen	28 days	

Clinical and Interpretive

Clinical Information

Thallium is a by-product of lead smelting. The clinical interest in thallium derives primarily from its use as a rodenticide since this is the most frequent route of human exposure.

Thallium is rapidly absorbed via ingestion, inhalation, skin contact, and through the mucous membranes of the mouth, gastrointestinal tract, and lungs. It is considered to be as toxic as lead and mercury, with similar sites of action.

The mechanism of action of thallium is:

- Competition with potassium at cell receptors to affect ion pumps
- Inhibition of DNA synthesis
- Binds to sulfhydryl groups on proteins in neural axons
- Concentrates in renal tubular cells and reacts with protein to cause necrosis

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

Reference Values

0-17 years: not established

> or =18 years: <2 ng/mL

Interpretation

Normal blood concentrations are less than 1 ng/mL.

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

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;28:263-272
2. Zhao G, Ding M, Zhang B, et al: Clinical manifestations and management of acute thallium poisoning. Eur Neurol

2008;60:292-297

Performance**Method Description**

Thallium in blood and urine is analyzed by inductively coupled plasma-mass spectrometry (ICP-MS) in standard mode using rhodium (Rh) as an internal standard and a salt matrix calibration.(Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Tuesday, Friday; 8 a.m.

Analytic Time

1 day

Maximum Laboratory Time

5 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. 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. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

83018

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

