

Overview

Useful For

Detecting mercury toxicity using random urine specimens

Special Instructions

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

Method Name

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

- HGPU / Mercury/Creatinine Ratio, Random, Urine
- HMPCR / Heavy Metal/Creatinine Ratio, with Reflex, Random Urine.

Triple-Quadrupole Inductively Coupled Plasma Mass Spectrometry (ICP-MS/MS)

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

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

- HGPU / Mercury/Creatinine Ratio, Random, Urine
- HMPCR / Heavy Metal/Creatinine Ratio, with Reflex, Random Urine.

Specimen Minimum Volume

1.5 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

| Specimen Type | Temperature              | Time   | Special Container |
|---------------|--------------------------|--------|-------------------|
| Urine         | Refrigerated (preferred) | 7 days |                   |
|               | Frozen                   | 7 days |                   |

## Clinical & Interpretive

### Clinical Information

The correlation between the levels of mercury (Hg) excretion in the urine and the clinical symptoms is considered poor.

Previous thought indicated urine as a more appropriate marker of inorganic mercury because organic mercury represented only a small fraction of urinary mercury. Based on possible demethylation of methylmercury within the body, urine may represent a mixture of dietary methylmercury and inorganic mercury. Seafood consumption can contribute to urinary mercury levels (up to 30%),<sup>(1)</sup> which is consistent with the suggestion that due to demethylation processes in the human body, a certain proportion of urinary mercury can originate from dietary consumption of fish/seafood.<sup>(2)</sup>

For more information see HG / Mercury, Blood.

### Reference Values

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

-HGU CR / Mercury/Creatinine Ratio, Random, Urine

-HMUCR / Heavy Metal/Creatinine Ratio, with Reflex, Random Urine.

0-17 years: Not established

> or =18 years: <2 mcg/g creatinine

### Interpretation

Daily urine excretion of mercury above 50 mcg/day indicates significant exposure (per World Health Organization standard).

### Cautions

To avoid contamination by dust, specimen should be collected away from the site of suspected exposure.

### Clinical Reference

1. Snoj Tratniid J, Falnoga I, Mazej D, et al. Results of the first national human biomonitoring in Slovenia: Trace elements in men and lactating women, predictors of exposure and reference values. *Int J Hyg Environ Health*. 2019;222(3):563-582. doi:10.1016/j.ijheh.2019.02.008
2. Sherman LS, Blum JD, Franzblau A, Basu N. New insights into biomarkers of human mercury exposure using naturally occurring mercury stable isotopes. *Environ Sci Technol*. 2013;47(7):3403-3409. doi:10.1021/es305250z
3. Lee R, Middleton D, Caldwell K, et al. A review of events that expose children to elemental mercury in the United States. *Environ Health Perspect*. 2009;117(6):871-878. doi:10.1289/ehp.0800337
4. Bjorkman L, Lundekvam BF, Laegreid T, et al. Mercury in human brain, blood, muscle and toenails in relation to exposure: an autopsy study. *Environ Health*. 2007;6:30. doi: 10.1186/1476-069X-6-30
5. Bernhoft RA. Mercury toxicity and treatment: a review of the literature. *J Environ Public Health*. 2012;2012:460508. doi:10.1155/2012/460508
6. Strathmann FG, Blum LM: Toxic elements. In: Rifai N, Chiu RWK, Young I, Burnham CD, Wittwer CT, eds. *Tietz Textbook of Laboratory Medicine*. 7th ed. Elsevier; 2023:chap 44

Performance

Method Description

The metal of interest is analyzed by triple-quadrupole inductively coupled plasma mass spectrometry.(Unpublished Mayo method).

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

2 to 4 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

83825

LOINC® Information

| Test ID | Test Order Name             | Order LOINC® Value |
|---------|-----------------------------|--------------------|
| HGCU    | Mercury/Creatinine Ratio, U | 13465-0            |

| Result ID | Test Result Name            | Result LOINC® Value |
|-----------|-----------------------------|---------------------|
| 608903    | Mercury/Creatinine Ratio, U | 13465-0             |