

Mercury, 24 Hour, Urine

## **Overview**

### **Useful For**

Detecting mercury toxicity using 24-hour urine specimens

# **Special Instructions**

- <u>Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens</u>
- Metals Analysis Specimen Collection and Transport

### **Method Name**

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

#### **NY State Available**

Yes

## Specimen

## **Specimen Type**

Urine

## **Necessary Information**

24-Hour volume (in milliliters) is required.

## Specimen Required

**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: Urine Tubes, 10 mL (T068)

Collection Container/Tube: Clean, plastic urine container with no metal cap or glued insert

Submission Container/Tube: Plastic, 10-mL urine tube or a clean, plastic aliquot container with no metal cap or glued

insert

**Specimen Volume:** 3 mL **Collection Instructions:** 

- 1. Collect urine for 24 hours.
- 2. Refrigerate specimen within 4 hours of completion of 24-hour collection.
- 3. See Metals Analysis Specimen Collection and Transport for complete instructions.

**Additional Information:** See <u>Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens</u> for multiple collections.

## **Urine Preservative Collection Options**

Note: The addition of preservative or application of temperature controls must occur within 4 hours of completion of



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the collection.

Ambient (no	No	
additive)		
Refrigerate (no	Preferred	
additive)		
Frozen (no additive)	ОК	
50% Acetic Acid	ОК	
Boric Acid	No	
Diazolidinyl Urea	No	
6M Hydrochloric	ОК	
Acid		
6M Nitric Acid	ОК	
Sodium Carbonate	No	
Thymol	No	
Toluene	No	

## **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%),(1) 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.(2)

For more information see HG / Mercury, Blood.

# **Reference Values**



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0-17 years: Not established > or =18 years: <2 mcg/24 h

Toxic concentration: >50 mcg/24 h

The concentration at which toxicity is expressed is widely variable between patients. The lowest concentration at which toxicity is usually apparent is 50 mcg/24 h.

#### 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 Heatlh. 2019;222(3):563-582
- 2. Sherman LS, Blum JD, Franzblau A, Basu N. New insights into biomarkers of human mercury exposure using naturally occurring mercury stable isotopes. Envrn Sci Technol. 2013;47(7):3403-3409
- 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
- 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
- 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

1 to 3 days

## **Specimen Retention Time**



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14 days

# **Performing Laboratory Location**

Mayo Clinic Laboratories - Rochester Superior Drive

# **Fees & Codes**

## **Fees**

- Authorized users can sign in to <u>Test Prices</u> for detailed fee information.
- Clients without access to Test Prices can contact <u>Customer Service</u> 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact <u>Customer Service</u>.

#### **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
HGU	Mercury, 24 Hr, U	6693-6

Result ID	Test Result Name	Result LOINC® Value
8592	Mercury, 24 Hr, U	6693-6
TM5	Collection Duration (h)	13362-9
VL3	Volume (mL)	3167-4