

Overview

Useful For

Detecting mercury toxicity, a toxic heavy metal, using random urine specimens

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
HGCU	Mercury/Creatinine Ratio, U	No	Yes
CRETR	Creatinine, Random, U	No	Yes

Special Instructions

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

Method Name

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

CRETR: Enzymatic Colorimetric Assay

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Patient Preparation: High concentrations of gadolinium and iodine are known to interfere with most 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 clean, plastic aliquot container with no metal cap or glued insert

Specimen Volume: 3 mL

Collection Instructions:

1. Collect urine a random urine specimen.
2. See [Trace Metals Analysis Specimen Collection and Transport](#) for complete instructions.

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.

It had always been thought that urine was 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 additional information, see HG / Mercury, Blood.

Reference Values

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 Apr;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. Environ Sci and Tech. 2013 Apr2;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 Jun;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 Oct 11;6:30

Performance

Method Description

Mercury:

Mercury (Hg) is analyzed by inductively coupled plasma-mass spectrometry (ICP-MS) in MS/MS mode using oxygen as a reactive gas to mass shift tungsten away from the mass of interest. Internal standard used is iridium for Hg. A salt matrix calibration is used.(Unpublished Mayo method).

[Creatinine:](#)

The enzymatic method is based on the determination of sarcosine from creatinine with the aid of creatininase, creatinase, and sarcosine oxidase. The liberated hydrogen peroxide is measured via a modified Trinder reaction using a colorimetric indicator. Optimization of the buffer system and the colorimetric indicator enables the creatinine concentration to be quantified both precisely and specifically.(Package insert: Creatinine plus ver 2. Roche Diagnostics; V15.0, 03/2019)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

1 to 3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

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 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 US Food and Drug Administration.

CPT Code Information

83825

82570

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
HGUCR	Mercury/Creat Ratio, Random,U	13465-0

Result ID	Test Result Name	Result LOINC® Value
CRETR	Creatinine, Random, U	2161-8
608903	Mercury/Creatinine Ratio, U	13465-0