Test Definition: PBCU

Lead/Creatinine Ratio, Urine

Overview

Useful For

Detecting clinically significant lead exposure using random urine specimens

This test is **not a substitute for** blood lead screening.

Special Instructions

- Metals Analysis Specimen Collection and Transport

Method Name

Only orderable as part of profile. For more information see:
-PBUCR / Lead/Creatinine Ratio, Random, Urine
-HMUCR / 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:
-PBUCR / Lead/Creatinine Ratio, Random, Urine
-HMUCR / 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)	28 days	

	Ambient	28 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Increased urine lead concentration per gram of creatinine indicates significant lead exposure. Measurement of urine lead concentration per gram of creatinine before and after chelation therapy have been used as an indicator of significant lead exposure. An increase in lead concentration per gram of creatinine in the post-chelation specimen of up to 6 times the concentration in the pre-chelation specimen is normal.

Blood lead is the best clinical correlation of toxicity.

For more information see PBDV / Lead, Venous, with Demographics, Blood.

Reference Values

Only orderable as part of profile. For more information see:
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-HMUCR / Heavy Metal/Creatinine Ratio, with Reflex, Random, Urine

0-17 years: Not established
> or =18 years: <2 mcg/g creatinine

Interpretation

Urinary excretion of less than 4 mcg/g creatinine is not associated with any significant lead exposure.

Urinary excretion greater than 4 mcg/g creatinine is usually associated with pallor, anemia, and other evidence of lead toxicity.

Measurements of urinary lead levels have been used to assess lead exposure. However, like lead blood, urinary lead excretion mainly reflects recent exposure and thus shares many of the same limitations for assessing lead body burden or long-term exposure.(1,2)

Urinary lead concentration increases exponentially with blood lead and can exhibit relatively high intra-individual variability, even at similar blood lead concentrations.(3,4)

Cautions

No significant cautionary statements

Clinical Reference

1. Sakai T. Biomarkers of lead exposure. Ind Health. 2000;38(2):127-142. doi:10.2486/indhealth.38.127
2. Skerfving S. Biological monitoring of exposure to inorganic lead. In: Clarkson TW, Friberg L, Nordberg GF, Sager PR, eds. Biological Monitoring of Toxic Metals. Rochester Series on Environmental Toxicity. Springer; 1988:169-197
3. Gulson BL, Jameson CW, Mahaffey KR, et al. Relationships of lead in breast milk to lead in blood, urine, and diet of the infant and mother. Environ Health Perspect. 1998;106(10):667-667. doi:10.1289/ehp.98106667

4. Skerfving S, Ahlgren L, Christoffersson JO. Metabolism of inorganic lead in man. Nutr Res 1985;Suppl 1:601-607
5. Kosnett MJ, Wedeen RP, Rotherberg SJ, et al. Recommendations for medical management of adult lead exposure. Environ Health Perspect. 2007;115(3):463-471. doi:10.1289/ehp.9784
6. de Burbane C, Buchet JP, Leroyer A, et al. Renal and neurologic effects of cadmium, lead, mercury, and arsenic in children: evidence of early effects and multiple interactions at environmental exposure levels. Environ Health Perspect. 2006;114(4):584-590. doi:10.1289/ehp.8202
7. 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
8. Hauptman M, Bruccoleri R, Woolf AD. An update on childhood lead poisoning. Clin Pediatr Emerg Med. 2017;18(3):181-192. doi:10.1016/j.cpem.2017.07.010

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.

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Lead/Creatinine Ratio, Urine

CPT Code Information

83655

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
PBCU	Lead/Creatinine Ratio, U	13466-8

Result ID	Test Result Name	Result LOINC® Value
608904	Lead/Creatinine Ratio, U	13466-8