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**Lab Dept:** Chemistry

**Test Name:** HEAVY METALS SCREEN, BLOOD

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***General Information***

**Lab Order Codes:** HMSB

**Synonyms:** Arsenic, blood; Cadmium, blood; Lead, blood; Mercury, blood; Metals Screen, blood; As, Cd, Pb, Hg

**CPT Codes:** 82175 – Arsenic  
82300 – Cadmium  
83655 –Lead  
83825 - Mercury

**Test Includes:** Arsenic, cadmium, lead, and mercury

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***Logistics***

**Test Indications:** Detecting exposure to arsenic, lead, cadmium, and mercury

**Lab Testing Sections:** Chemistry - Sendouts

**Referred to:** Mayo Clinic Laboratories (MML Test: HMDB)

**Phone Numbers:** MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** 1 - 3 days, test set up Monday - Saturday

**Special Instructions:** Obtain special collection tube from the laboratory. [See Container.](#) [See Collection.](#)

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***Specimen***

**Specimen Type:** Whole blood

**Container:** **Obtain this collection container from the lab:**  
Dark Blue top with Lavender Stripe (EDTA, metal free) tube

Alternative: EDTA microtainer, see [Limitations](#)

**Draw Volume:** Full tube if possible 6 mL (Minimum: 0.3 mL) blood

**Processed Volume:** Same as Draw Volume

**Collection:** **Preferred collection – Dark Blue top with Lavender Stripe, trace element tube:** Draw blood into a dark blue top with lavender stripe trace element blood collection tube, containing EDTA as an anticoagulant. Blood must be drawn directly into the tube with the use of a butterfly needle or other stainless steel needle by vacutainer technique. The royal blue tube **must be** the first tube collected to prevent contamination. Mix gently. Mayo Supply T183/BD #368381.

**EDTA BD microtainer:** See [Limitations](#). Perform a fingerstick for this testing. Heavy Metals and Zinc can be collected via fingerstick by collecting 0.5 mL. If drawing other tubes, collect this one first. The metals tube cannot be shared with other EDTA-related testing (e.g., CBC) and will only be used for the metals testing. Mix gently.

**Special Processing:** Lab Staff: **Do Not** Centrifuge. Send the **whole blood** specimen in original collection container. Store and ship at refrigerated temperatures. Make sure to result demographic information prior to sending specimen. Forward promptly.

Specimen stable refrigerated (preferred), ambient or frozen for 28 days.

**Patient Preparation:** None

**Sample Rejection:** Green top (heparin) tube is not acceptable, anticoagulants other than EDTA, specimens other than blood, mislabeled or unlabeled specimens

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**Interpretive**

**Reference Range:**

<b>Lead</b>	
All ages:	< 3.5 mcg/dL
<b>Arsenic</b>	
All ages:	< 13 ng/mL
<b>Cadmium</b>	
All ages:	< 5.0 ng/mL
<b>Mercury</b>	
All ages	< 10 ng/mL

**Critical Values:** Lead: ≤15 years: ≥20.0 mcg/dL

Lead: Adult (≥16 yrs) ≥70.0 mcg/dL

**Limitations:**

If a non-metal-free microtainer is used for collection and the result is positive, a qualifier comment will be added by the reference lab that the result may be falsely elevated due to contamination.

Gadolinium and iodine are known to interfere with most metals tests. If gadolinium or iodine-containing contrast media has been administered, a specimen cannot be collected for 96 hours.

**Methodology:**

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

**References:**

[Mayo Clinic Laboratories](#) January 2024

**Updates:**

3/24/2008: Metal-free syringes are not available for collection. Use vacutainer or finger stick option into a microtainer.

8/18/2009: Units for Lead changed from ug/dL to mcg/dL. Units for Arsenic changed from ug/mL to mcg/mL.

11/17/2010: Arsenic units changed from mcg/mL to ng/mL. Toxic level for Mercury removed. All reference ranges updated.

7/27/2015: Updated lead reference ranges.

3/30/2016: Update Lead reference range by MML.

2/14/2017: Updated tube type.

1/24/2024: Updated reference range and methodology. Added specimen stability. Added clarifying limitation describing the non-published acceptance of specimens collected in microtainers, confirmed with reference lab client services.