

## Clinical Testing

### Blood Lead

#### Pediatric Blood Lead

This clinical chemistry unit offers analytical services to local health departments, clinics and physicians for the determination of blood lead levels in support of the statewide Childhood Lead Poisoning Prevention Program (CLPPP).

#### Micro Specimen Requirements

Submit a minimum of 100  $\mu$ L (microliter) of EDTA anticoagulated whole blood drawn into a microtainer supplied in the kit; adhere to the directions provided by the CLPPP.

#### Macro Specimen Requirements

Submit a minimum of 1 mL (milliliter) of EDTA anticoagulated whole blood drawn into a trace metal free vacutainer; adhere to directions provided by the CLPPP.

#### Information Required

Completed blood lead submission form

#### Collection Materials

Refer to appendix C

#### Criteria for Rejection

Specimen is clotted; insufficient amount of specimen; specimen older than 15 days old from time of collection; specimen not labeled; no submission form; incorrect anticoagulant

#### Test Methodology

Graphite furnace atomic absorption spectrophotometry; inductively coupled plasma-mass spectrometry (ICP-MS)

#### Interfering Substances

Lead contamination (most prevalent in fingersticks due to surface lead on skin), fluoride

#### Acceptable Value

Less than 10  $\mu$ g/dL (microgram/deciliter)

#### Instructions for Fingerstick Blood Collection Procedure

1. Wear a lab coat, gloves and plastic shield: ready a lancet and microtainer for use.
2. **Important!** Thoroughly wash the child's hand with warm water and soap.
3. Clean the tip of the child's ring or middle finger with an alcohol wipe, and then thoroughly remove any residual alcohol with a sterile gauze pad.
4. With the child's hand in palm up position, grasp the finger at the crease of the first joint with your thumb and forefinger, squeezing slightly.
5. Press the lancet firmly against the fingertip slightly to the side (avoid piercing the tender spot in the center of the fingertip).  
**Use only sterile disposable lancets. Do not use refillable lancet devices. These risk cross contamination from one client to the next.**
6. Wipe off the first drop of blood with a dry, sterile gauze square. Discard the lancet in a puncture proof sharps container. Discard alcohol wipes and gauze in a biohazard bag
7. Wait for the spontaneous free flow of blood. Allow a large drop of blood to collect on the fingertip.
8. Invert the hand and collect blood into the microtainer between the first and second line. As the blood is collected, gently apply pressure intermittently with the thumb and forefinger to enhance blood flow.
9. If sufficient blood is not obtained with the first finger stick, select another site/finger and repeat the stick procedure.
10. Apply gentle pressure with a gauze against the fingertip until the bleeding ceases. Discard the gauze in the biohazard bag. Place a bandage on the finger.
11. Cap the microtainer, and **mix** the blood with the anticoagulant by gently rocking the tube.
12. Label tube with first and last name along with the child's date of birth. If you cannot label the tube, one tube may be placed in a single plastic bag and that bag can be labeled with the full name and date of birth.
13. Place in a shipping container for transport to the laboratory.
14. Clean and disinfect area with 1:10 bleach solution.
15. Discard waste in the biohazard bag.
16. Remove and discard gloves in the biohazard bag. Wash hands.
17. **Refrigerate blood specimens until shipped.**

*Note: The heel may be used as a collection site for infants younger than 6 weeks old.*

**Clinical Testing**  
**Blood Lead**  
**Instructions for Blood Lead Specimen Submission**

1. For capillary specimens, fill micro-tube to at least above the first line marked on the tube. For venous specimens, fill the vacutainer tube provided with a minimum of 1.0 mL of blood. Mix both capillary and venous specimens by gentle inversion five to 10 times.
2. The specimen must be labeled with the patient's full name and date of birth. For capillary specimens, use a black **permanent** marker.
3. Complete all information on the test requisition using black ink in capital letters. Be sure to keep all writing within the boxes.
4. Place **each** specimen into an **individual** small plastic bag.
5. a. Messenger/Courier by ground transport
  - i. Place individually bagged specimen(s) in a biohazard labeled bag with absorbent material and seal securely.
  - ii. Place the test requisition(s) on the outside of the biohazard labeled bag.
  - iii. Place the sealed biohazard bag and test requisition(s) inside the shipping container. The shipping container must be rigid such as a cooler.
  - iv. Close securely.
6. b. Commercial carrier by ground/air transport
  - i. Place the specimen(s) inside a biohazard labeled 95 kPa bag with absorbent pad and seal following the instructions on the bag.
  - ii. Place the test requisition(s) in the 95 kPa bag outside pouch so that it does not come in contact with the specimen sealed in the bag.
  - iii. Place the sealed 95 kPa bag and completed test requisitions(s) inside the outer shipping container and close securely (tape).
  - iv. Place the Illinois Department of Public Health provided mailing label on the outer shipping container.
  - v. Complete the return address section.
  - vi. Write or label "Exempt Human Specimen" on the outer shipping container.
7. If the specimen(s) cannot be shipped immediately, store at 2 C to 8 C (refrigerator).
8. **Blood lead specimens should reach the Springfield laboratory within 15 days of collection.**

Ship to:

Illinois Department of Public Health Laboratory  
825 N. Rutledge St.  
Springfield, IL 62702-4910  
Phone: 217-782-6562  
Fax: 217-524-7924