



Blood lead screening

2023 IHCP works annual seminar



Agenda

Lead toxicity overview:

- Indiana lead testing recommendations
- IDOH guidance for implementation of lead screening
- Verbal risk assessment
- Blood lead test refusal
- Childhood blood lead medical management guidelines for providers in Indiana

Lead toxicity overview

- There is **no** safe level of lead in the blood of a child.

Exposure to lead can seriously harm a child's health and cause well documented adverse effects such as:

- Damage to the brain and nervous system.
- Slowed growth and development.
- Learning and behavior problems and underperformance in school.
- Lower IQ and decreased ability to pay attention.
- Hearing and speech problems.

Lead toxicity overview (cont.)

Lead is particularly dangerous because once in a person's system, it is distributed throughout the body, causing harm wherever it lands.

In the bloodstream, it can damage red blood cells and limit their ability to carry oxygen to organs and tissues, causing anemia. Most lead ends up in the bone where it interferes with the production of red blood cells and the absorption of calcium. The effects of long-term lead toxicity include damage to the nervous system, kidneys, hearing, poor muscle coordination, and decreased bone and muscle growth.

Lead toxicity overview (cont.)

The American academy of pediatrics recommends:

- Physicians continue to provide anticipatory guidance to parents to prevent lead exposure.
- Pediatricians should increase their efforts to assess children at risk for lead exposure to find those with elevated blood lead levels (EBLLs).

Populations at higher risk of lead exposure include:

- Children from low-income households.
- Those living in housing built before 1978 .
- Immigrant and refugee children from less developed countries.
- Children younger than age six (hand to mouth activity).
- Some African American children, and those from other races and ethnicities, due to poor housing stock.

Indiana lead testing recommendations

Testing refugee populations:

- CDC recommends that all refugee children 0 to 16 years of age should be evaluated for lead exposure with a blood lead test upon entry into the United States:
 - Follow-up blood lead testing, 3 to 6 months after initial testing, should be provided to all refugee infants and children < 6 years of age, regardless of initial screening result.
 - Children and adolescents 7 to 16 years of age who had blood lead levels > 3.5 µg/dL (micrograms/deciliters), and any child older than seven years of age who has a risk factor (For example, sibling with blood lead level > 3.5 µg/dL) should also receive follow-up testing 3 to 6 months after initial testing.
 - All pregnant and lactating individuals should be tested.
 - All newly arrived pregnant or breastfeeding individuals should be prescribed a prenatal or multivitamin with adequate iron and calcium.

Referral to a healthcare provider with expertise in high-risk lead exposure treatment and management may be indicated for EBLLs:

- It is recommended that clinicians **assess all children** for the risk of lead exposure from ages 6 months to 6 years **at every well child visit.**

IDOH guidance for implementation of lead screening requirements from house enrolled act (HEA) 1313

- On March 10, 2022 , Governor Holcomb signed into law a bill requiring healthcare providers to confirm that children under 7 have been tested for lead, and if not, to offer this testing to the parent or guardian of that child. The bill became effective January 1, 2023 .
- Within the law, there are references to a *blood lead screening test, screening children, and lead poisoning screening*. Each of these references is intended to refer to either a capillary or venous blood lead test as defined in [410 IAC 29-1-3 and 410 IAC 29-1-25](#).
- The law directs the Indiana Department Of Health (IDOH) to *establish guidance and standards for healthcare providers* as it relates to required screening and testing.

Indiana lead testing requirements

Children enrolled in Medicaid

Indiana statute **requires** that **all** children enrolled in Medicaid are to receive a blood lead level test at **12 and 24 months** of age; **any** child enrolled in Medicaid between 36 and 72 months with no record of a previous blood lead test must also be tested.

Indiana lead testing requirements (cont.)

Additional testing should be strongly considered if children:

- Live in a house built before 1978 or a home that was recently repaired or renovated.
- Are enrolled in women, infant, and children supplemental nutrition program (WIC) or head start.
- Have any of the risk factors in the verbal risk assessment.
- Are adopted outside the United States, in foster care, or are immigrants.
- Have a known history of lead exposure after the age of 2 years old.
- Have a sibling or a playmate with lead toxicity.
- Have parents who request testing.
- Live near a lead-emitting facility.
- Are exhibiting neurodevelopmental disabilities or conditions such as autism, attention-deficit/hyperactivity disorder, and learning delays.
- Have a history of pica behavior or ingesting non-food items (for example; jewelry, batteries, toys, etc.).

IDOH guidance for implementation of lead screening requirements from House Enrolled Act (HEA) 1313

To ensure uniformity between HEA 1313 and the early and periodic screening diagnostics and treatment (EPDST) guidelines, IDOH is requiring all providers to follow the steps below:

- **Children should receive a blood lead test between the ages of 9 and 15 months, or as close as reasonably possible to the patient's appointment.**
- **Children should have another blood lead test between the ages of 21 and 27 months, or as close as reasonably possible to the patient's appointment.**
- **Any child between 28 and 72 months who does not have a record of any prior blood lead test must have a blood lead test performed as soon as possible.**
- If a provider can verify that blood lead testing has occurred at the required intervals, they are not obligated to repeat the procedure. Verification can be obtained through the children's health and immunization registry program (CHIRP) or the records from another provider.

Verbal Risk Assessment Form

The **verbal risk assessment** helps healthcare providers assess a child's potential level of risk of exposure to lead hazards. It also provides health care providers an opportunity to educate families about lead hazards. **If the answer to any question on the verbal risk assessment is *yes* or *I don't know*, then:**

- Test the child for lead toxicity at that time.
- Test the child at least annually or if any other risk factor exists. Continue to test until the child turns 6 years old or responses to the assessment change.
- Provide lead toxicity prevention education.

**** Completion of the assessment does not meet the Medicaid testing requirement.***

Verbal Risk Assessment Form (cont.)

Verbal Risk Assessment:

The **Verbal Risk Assessment** helps health care providers assess a child's potential level of risk of exposure to lead hazards. It also provides health care providers an opportunity to educate families about lead hazards. **If the answer to any question on the Verbal Risk Assessment is "Yes" or "I don't know,"** then:

- Test the child for lead toxicity at that time
- Test the child at least annually or if any other risk factor exists. Continue to test until the child turns 6 years old or responses to the assessment change.
- Provide lead toxicity prevention education

** Completion of the assessment does not meet the Medicaid testing requirement.*

In the past year, has your child lived in, near, or regularly visited:	Yes	No	I don't know
A house built before 1978 that has peeling, chipping, or flaking paint?			
A house built before 1978 that has been remodeled within the past 6 months?			
A sibling, cousin, or friend who has been diagnosed or treated for lead toxicity?			
A factory or industrial plant or mine?			
Mexico, India, Middle East, Central America, South America, Africa, or Asia?			
In the past year, has your child been around adults who:	Yes	No	I don't know
Have a job that causes them to have frequent contact with lead (e.g. plumbers, construction, auto repair, metal/battery recycling, welders)?			
Have a hobby that causes them to have frequent contact with lead (e.g. hunt, fish, reload bullets, refinish furniture, work with stained glass, jewelry making)?			
In the past year, has your child consumed:	Yes	No	I don't know
Food or beverages from ceramic cookware/dishware or imported pottery?			
Food or candy with spices imported or brought in from another country (such as turmeric)?			
Ayurvedic medicines or home remedies (such as Azarcon, Greta)?			
Dirt or non-food items regularly (more than the typical baby mouthing behavior)?			
Cosmetics imported or brought from another country (such as Thanaka, Kohl)?			

Blood lead test refusal

If a parent or guardian refuses to allow their child to be tested, providers are encouraged to document the refusal in writing and have the parent or guardian sign an attestation of refusal. A sample refusal attestation accompanies this guidance. Providers are expected to keep a copy of the refusal, either digital or hard copy, with the patient record until the child reaches age 7 . Providers are only required to keep a single refusal on file if a parent or guardian indicates they will not allow initial or follow-up testing.



Blood Lead Test Refusal Attestation Form



Division of
**Lead &
Healthy Homes**

Blood Lead Test Refusal Attestation

Child's Name (Please Print): _____ Date: ____/____/____

Physician Name (Please Print): _____

As the legal parent/guardian of the child identified above, I refuse to let the provider identified above test my child's blood for the presence of lead.

Parent/Legal Guardian Name (Please Print)

Parent/Legal Guardian Signature

_____/_____/_____
Date

Childhood blood lead medical management guidelines for providers in Indiana

General medical evaluation and testing recommendations:

- Perform routine physical and history and developmental assessment. Evaluate achievement of, or regression from, milestones, particularly in psychosocial and language domains.
- Assess nutrition and risk for iron deficiency.
- Evaluate for lead exposure risks.
- Initial test may be a capillary or venous test. Children with identified risk factors should be retested with a venous sample.

Childhood blood lead medical management guidelines for providers in Indiana (cont.)

General clinical management recommendations:

- Report the blood lead result to IDOH.
- Discuss result with family and counsel on any identified risk factors.
- Provide prevention education (for example; lead sources, reducing/eliminating strategies, health education, etc.)
- Counsel on nutrition and healthy eating, focusing on iron, calcium, and vitamin C intake.
- Communicate patient management information with local health department.
- Consider referral to supplemental nutrition program for women, infants, and children.

Medical management guidelines

Medical evaluation and testing recommendations	Clinical management
BLL < 3.5 µg/dL	
<p>General medical evaluation & testing recommendations (given above)</p> <p>Who to test?</p> <ul style="list-style-type: none">• Medicaid recipients at 12 and 24 months, or any time before six years old if not previously screened.• Children in homes built before 1978 or with other risk factors• Children at the request of their parents/guardians. <p>Monitor BLLs:</p> <ul style="list-style-type: none">• Retest of BLL done no later than 12 months.	<p>General clinical management recommendations (given above)</p> <ul style="list-style-type: none">• When reviewing lab results with family, for reference, the geometric mean blood lead level for children one to five years old is less than two µg/dL. <p>Chelation is not recommended in this blood lead level range.</p>

Medical management guidelines (cont.)

Medical evaluation and testing recommendations

Clinical management

BLL 3.5-4.9 µg/dL

General medical evaluation & testing recommendations (given above), PLUS:

- Note the child's environmental history.
- Ensure iron sufficiency with laboratory testing and treatment per Pediatric Environmental Health Specialty Unit (PEHSU) and American Academy of Pediatrics guidelines.
- Perform structured developmental screening evaluations at periodic health visits.
- Evaluate risk to household contacts such as siblings and pregnant/lactating women in the home.

Monitor BLLs:

- Confirmatory BLL draw within three months of original may be done within shorter time period.
- Retest of BLLs, done no later than three months.
- If retest result is in another range, follow up as for that range.
- If BLLs are stable or decreasing, monitor initially with venous BLLs every three months and thereafter based on venous BLL trend. If retest result is in another range, follow-up or retest as for that range.
- Children with prior exposure to lead may continue to have EBLLs. Providers should continue to monitor these children with follow-up testing at less frequent intervals than the usual recommendation.

General clinical management recommendations (given above), PLUS:

- Assess the child's environmental risk factors, eating habits, housing, and family's social service needs.
- Test for iron sufficiency. Consider starting a multivitamin tablet with iron.
- Test siblings, other children
- Include primary/secondary residence and child-care facility as part of the investigation.

Chelation is not recommended in this BLL range

Medical management guidelines (cont.)

Medical evaluation and testing recommendations

Clinical management

BLL 5-19.9 µg/dL

General medical evaluation & testing recommendations (given above), PLUS:

- Note the child's environmental history.
- Ensure iron and calcium sufficiency with laboratory testing and treatment per [Pediatric Environmental Health Specialty Unit \(PEHSU\) and American Academy of Pediatrics guidelines](#).
- Perform structured developmental screening evaluations at periodic health visits as lead effects may manifest over years.
- Evaluate risk to household contacts such as siblings and pregnant/lactating women in the home.

Monitor BLLs:

- Confirmatory BLL draw within one to three months of original. Venous test preferred, capillary acceptable
- Retest thereafter within three months until BLL declines
- If retest result is in another range, follow up as for that range.
- If BLLs are stable or decreasing, monitor initially with venous BLLs based on venous BLL trend. If retest result is in another range, follow-up or retest as for that range.

General clinical management recommendations (given above), PLUS:

- Assess the child's environmental risk factors, eating habits, housing, and family's social service needs.
- If a past exposure is noted, perform developmental screenings at periodic health visits (see above). Health effects of lead manifest over time.
- Test for iron sufficiency. Consider starting a multivitamin tablet with iron.
- Test siblings, other children < 7 years old, and household contacts, especially pregnant and lactating women
- Make referrals to the local social services and assistance (WIC, Head Start, First Steps, Help Me Grow, etc.) if necessary.
- Include primary/secondary residence and childcare facility as part of the investigation.
- An environmental investigation and recommendations for remediation services and a home visit (education/referrals) by local health department (LHD) staff will be completed at this BLL. If BLL is persistent or rising, contact the local LHD.

Chelation is not recommended in this BLL range.

Medical management guidelines (cont.)

Medical evaluation and testing recommendations	Clinical management
BLL 20-44.9 µg/dL	
<p>General medical evaluation & testing recommendations (given above), PLUS:</p> <ul style="list-style-type: none">• Complete diagnostic evaluation, history and physical exam with neurodevelopmental assessment. <p>Monitor BLLs:</p> <ul style="list-style-type: none">• Confirmatory BLL draw within two weeks. Venous test preferred, capillary acceptable• Retest BLL draw within two weeks to one month to ensure BLL is not rising. Venous test preferred, capillary acceptable.• Monitor monthly and afterward based on the BLL trend. If retest result is in another range, follow up as for that range.	<p>General clinical management recommendations (given above), PLUS:</p> <ul style="list-style-type: none">• Additional evaluation such as abdominal x-ray should be considered based on environmental investigation and history (for example, pica for paint chips, mouthing behaviors, etc.) Gut decontamination may be considered if leaded foreign bodies visualized on x-ray.• Nutrition consult <p>Chelation is not recommended in this BLL range.</p>

Medical management guidelines (cont.)

Medical evaluation and testing recommendations

Clinical management

BLL 45-69.9 µg/dL (Urgent Medical Situation)

General medical evaluation & testing recommendations (given above), PLUS:

- Any treatment for BLLs in this range and greater should be done in consultation with an expert. Contact IN Poison Control (**800-222-1222**) or Region 5 PEHSU (**866-967-7337**) for guidance regarding chelation, diagnostic tests, questions, etc.
- Medical evaluation with diagnostic evaluation.
 - Can be done in an outpatient setting for most patients.
 - Patients with concerning symptoms should be evaluated at a hospital.

Monitor BLLs:

- Confirmatory BLL draw within 48 hours.
- Consider reconfirming BLL, even for venous results.
- Retesting dependent on BLL range. Retest, venous only, one month after chelation therapy is completed.
- If confirmed in this range, monitor BLLs during chelation.
- Retest every two to four weeks (or more based on most recent BLLs).
- Modify treatment guidelines if BLL remains elevated.
- Monitor frequently until BLL declines.

General clinical management recommendations (given above), PLUS:

- Evaluate whether hospitalization is needed to reduce lead exposure (Managed with assistance of experienced provider).
- Notify LHD if admitted or chelation administered.

Chelation therapy:

- Consult with a provider experienced in managing chelation therapy.
- Chelation may be conducted at child's home if no lead hazards are present in the home. Active lead exposure should be stopped prior to administering chelation therapy. If hazard is present in the home, removing the child from that exposure should be a priority and occur as soon as possible
- Consider bowel decontamination as an adjunct to chelation if abdominal X-ray indicates enteral lead is present.
- Succimer can be prescribed.
- A minimum of two weeks between courses is recommended, unless more prompt treatment is indicated.
- Discontinue iron supplements.
- Monitor for anemia and neutropenia.

Post-Chelation Therapy Guidelines:

- Repeat venous lead test in one to three weeks after hospital discharge.
- Repeat venous lead test every two weeks for six to eight weeks after hospital discharge.
- Monitor lead level closely for four to six months after chelation
- Minimum of two-week intervals is needed between chelation courses.

Medical management guidelines (cont.)

Medical evaluation and testing recommendations	Clinical management
BLL ≥ 70 µg /dL (Medical Emergency)	
<p data-bbox="79 468 672 529">General medical evaluation & testing recommendations (given above), Plus:</p> <p data-bbox="79 575 297 604">Monitor BLLs:</p> <ul data-bbox="79 622 865 1159" style="list-style-type: none"> <li data-bbox="79 622 697 732">• Confirmatory BLL draw done immediately, emergency lab test, considered Medical Emergency. Venous test is preferred. <li data-bbox="79 743 865 811">• Retesting dependent on BLL range. Retest within one week to one month to ensure BLL is not rising. <li data-bbox="79 822 794 889">• Retest, venous only, one month after chelation is completed <li data-bbox="79 901 852 1011">• Monitor monthly and afterward based on the BLL trend. If retest result is in another range, follow up as for that range. <li data-bbox="79 1022 761 1089">• Any treatment for BLLs in this range should be done in consultation with an expert. <li data-bbox="79 1100 832 1159">• Refer to CDC and American Academy of Pediatrics recommendations related to chelation management. 	<p data-bbox="971 468 1812 529">General clinical management recommendations (given above), PLUS:</p> <p data-bbox="971 575 1707 642">Follow chelation therapy and post-chelation therapy guidelines listed above.</p>

Resources

- CDC: <https://www.cdc.gov/nceh/lead/>
- Environmental health specialty units (PEHSUs):
<https://childrensenviron.uic.edu/>
- AAPs bright futures guidelines:
<https://brightfutures.aap.org/Pages/default.aspx>
- Indiana department of health, Lead and healthy homes division:
<https://www.in.gov/health/lead-and-healthy-homes-division/>
- Indiana poison control: **800-222-1222** , <https://indianapoisoncenter.org/>



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and Hoosier Care Connect

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