

Childhood Poisoning Prevention Program: Lead, Health & Surveillance

Presented by: Dr. Rena Boss-Victoria
Section Director and Nursing Consultant
Land and Materials Administration
Maryland Department of Environment
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How Does MDE LHS Comply to HB 1110?

Responsibilities and Tasks?

No safe blood lead level in children has been identified.

- The “new” legal definition of Blood Lead Reference Value (BLRV) and Elevated Blood Lead Level is 3.5 ug/dL as of October 28, 2022 as part of the HB 1110 provisions for Maryland Department of Environment,
- Minimum standards are set by CDC and State law for LHS program activities that considers:
 - Patient characteristics
 - Caregiver capabilities
 - Coordination with Health Care Providers
 - Coordination with Parent/Guardians
 - Coordination with Environmental Investigators
 - Notifications from MDE for child EBLL 3.5 mcg/dL and greater to provider, parents/guardian, and property owners
 - Environmental and Medical Investigation Referral process

Blood Lead Level Tests: A small amount of blood taken from finger, heel or arm. How is the test done for lead poisoning?

- Finger-prick or heel-prick (capillary) sample: usually the first step to determine if a child has lead in blood. A capillary or finger prick test at or above CDCs BLRV is usually followed by a second test to confirm blood lead level.
- Venous blood draw takes blood from the child's vein and is less likely to be contaminated with lead during the collection process. A health care provider may order a venous blood draw to confirm the blood lead level seen in a screening or at a Point of Care lead test.
- Health care providers, Case Managers and Environmental Inspectors are each responsible for a response to a test for lead in the blood of children, ages 0-72 months that is elevated above the BLRV..

The cost of blood lead testing for children enrolled in Medicaid is covered by the Centers for Medicare & Medicaid Services. Most private insurance policies cover the cost of lead testing.

Short Term and Long Term Planning and Coordination

Coordinate with the health care provider and the guardian for follow-up blood lead test

Explain need for Public Health intervention (nursing and environmental)

Provide health education—possible sources, relationship of blood lead level to adverse health effects

Importance of nutrition and eating food high in iron and calcium

Means of reducing exposure through environmental management of identified risks

In complex cases, convene a team to plan approach

Coordinate on-going management of case with EI, verify lead-safe environment.

Lead is toxic wherever it is found, and there are health untoward effects. What are the health effects?

- **Gastrointestinal** or GI tract absorption: primary site in children caused by ingested lead load, up to 50% of dietary lead. Thirty per cent may be retained in the child's body and will show by increased BLLs. Various dietary factors influence the amount of absorption in the gut.
- **Lungs** or through the respiratory tract. Up to 70% of an inhaled dose of lead may be absorbed and pass directly into the circulation, trapped in mucous secretions, or subsequently swallowed. Small particles of lead paint dust commonly found inside window casings are released with repeated window openings is a common importance source of lead in children,
- **Psycho-social or psycho-behavioral evaluation:** Coordinate with Early Intervention and Educational Services

Organ System Effects: What is the Clinical presentation of lead poisoning in children?

Many factors place small children at higher risk for lead poisoning than adults:

- The immature brain of children is more susceptible to the toxic effects of lead.
- Young children have an increased tendency to ingest non-food items.
- Children absorb ingested lead at a rate five times greater than adults.
- Children in low-income families often have dietary iron and calcium deficiencies that increase lead absorption from the gut.
- The most controversial and clinically important aspects are the effects of lead on the central nervous system.

Lower intelligent (IQ) scores, learning disabilities, hyperactivity, aggressive and antisocial behavior, attention deficit disorders, autism, hearing and speech impediments and seizures have all been attributed to elevated lead burdens.

Summary: Health Related Symptoms Associated with Childhood Lead Poisoning

- **Gastrointestinal:** pain, vomiting, constipation
- **Bone:** altered bone formation and maturation. Delayed skeletal and teeth development
- **Renal (Kidney):** excessive urinary losses, but is usually reversible.
- **Auditory and Language:** Increased hearing threshold in children with BLL as low as 10 ug/dL. Abnormal language behaviors when BLL were above 11.5 ug/dL.
- **Visual:** blindness and eye muscle paralysis, cataracts and optic atrophy
- **Oral:** Swelling of the salivary glands, heavy coating on the tongue, and tongue tremors
Also, may present gum pigmentation known as “Lead Line” or 1-3mm bluish black or slate gray line at the gum margin.

Review and Report

Case Closure

Administrative Discharge

If follow-up BLL increases by ≥ 5 ug/dL. Case review with Environmental Investigator and repeat home visits are indicated

Review plans with Health Care Provider and report EI outcomes

Management complete when two consecutive tests are < 5 ug/dL. Venous or capillary.

All probable lead sources or hazards in the child's current environment have been investigated and remediated.

Administrative discharged from active follow-up when the local case manager has exhausted all active efforts to ensure medical and environmental management.

Conclusion: Lead is toxic wherever it is found and it is found everywhere!

The effects of low -level lead exposure may produce multiple organ system abnormalities, although the manifestations may be subtle or subclinical.

The assessment of the potential consequences of lost IQ points, decreased hearing, and impaired vision requires early detection and intervention.

The long-term impacts of low level lead exposure, as they pertain to adult social skills and job acquisition or performance, have not been adequately studied and remain unknown.

Thank you for your attention and time.

Questions and Discussion

Case Study