

**MISSISSIPPI STATE DEPARTMENT OF HEALTH
Lead Poisoning Prevention and
Healthy Homes Program
Care Coordination Plan**



Mississippi Lead Poisoning Prevention and Healthy Homes Program Care Coordination Plan

TABLE OF CONTENTS

I. Introduction/Purpose.....	2
II. Care Coordination-CDC Recommendations.....	2
III. Assessments.....	3
A. Environmental.....	3
B. Medical.....	4
C. Nutritional.....	5
D. Developmental.....	7
E. Educational.....	7
IV. Case Closure.....	9
V. Healthy Homes.....	10
VI. References.....	12
Appendix A: Roles and Responsibilities for Providing Care Coordination Services.....	13
Appendix B: Physician/Clinician Recommendations to Mitigate Lead Exposure.....	18

I. Introduction and Purpose

The Mississippi Lead Poisoning Prevention and Healthy Homes (MSLPPHHP) **Care Coordination Plan** was developed to support the efforts of the United States Department of Health and Human Services (Healthy People 2020) to reduce blood lead levels in children. Many professionals are involved in the effort to identify and to intervene in lead poisoning. The Lead Poisoning Prevention and Healthy Homes Advisory Committee was established to provide comprehensive input into this strategic planning process.

The purpose of a detailed care coordination plan is to guide Health Department staff, primary care provider clinic staff and physicians in the evaluation and treatment of children with elevated blood lead levels (EBLLs).

II. Care Coordination Process

A. Centers for Disease Control and Prevention Recommendations for Care Coordination

According to the Centers for Disease Control and Prevention (CDC), care coordination of children less than 72 months of age and prenatal patients with an EBLL involves coordinating, providing, and overseeing the services required to reduce their blood lead levels (BLLs) to below the reference value of $5\mu\text{g}/\text{dL}$. It is based on the efforts of an organized team that includes the child's caregivers. A hallmark of effective care coordination is ongoing communication with the caregivers and other service providers and a cooperative approach to solving any problems that may arise during efforts to decrease the child's BLL and eliminate lead hazards in the child's environment. Care coordination is not simply referring a child to other service providers, contacting caregivers by telephone, or other minimal activities.

Most programs use professionals (nurses or social workers) to deliver care coordination services. The care coordinator is usually a member of the local health department staff, although nearly half of all states also use other providers to deliver care coordination services. In most cases, a management team can best meet the needs of an individual child. The team may include the care coordinator, the child's caregiver, the child's primary care provider (PCP), an environmental inspector, a health educator, a nutritionist, and the local public health agency.⁽³⁾

B. Mississippi State Department of Health Care Coordination Recommendations

The Mississippi State Department of Health (MSDH) will provide recommendations for follow-up BLL testing, coordination of services, nutrition consultation, home visits and environmental investigation per protocol. Interventions may be adapted for special circumstances. BLLs $\geq 5\mu\text{g}/\text{dL}$ must be reported to the MSDH Lead Poisoning Prevention and Healthy Homes Program (LPPHHP) within one week of diagnosis (Class 2). Laboratories are required to report all blood lead test results within one week of completion (Class 3).

In Mississippi, the care coordination process begins when a child has a confirmed venous BLL $\geq 5\mu\text{g/dL}$. The laboratory notifies the MSLPPHHP Manager of the result. MSLPPHHP personnel then contact the child's provider to offer care coordination guidance.

Time Frames for Intervention and Other Care Coordination Activities According to a Child's Blood Lead Level.

Blood lead level $\mu\text{g/dL}$)	Actions	Time frame for beginning intervention
5-14	<ul style="list-style-type: none"> • Provide caregiver lead education. • Provide follow-up testing. • Refer the child for social services if necessary. 	Within 30 days
15-19	Above actions, plus: <ul style="list-style-type: none"> • If BLLs persist (i.e., 2 venous BLLs in this range at least 3 months apart) or increase, proceed according to actions for BLLs 20-44. 	Within 2 weeks
20-44	Above actions, plus: <ul style="list-style-type: none"> • Provide coordination of care (care coordination). • Provide clinical evaluation and care. • Provide environmental investigation and control current lead hazards. 	Within 1 week
45-70	Above actions.	Within 48 hours
70 or higher	Above actions, plus hospitalize child for chelation therapy immediately.	Within 24 hours

III. Assessments

The Care Coordination Plan includes Environmental, Medical, Nutritional, Developmental and Educational Assessments and Intervention protocols.

A) Environmental Assessment

An environmental assessment is performed for children whose BLLs are $\geq 15\mu\text{g/dL}$. The assessment consists of a surface by surface investigation to determine the source of exposure. The child's primary residence and any place the child spends at least six hours a week should be evaluated by the environmentalist.

Although there is currently no city, state, or local ordinances that require removal of lead-based paint (LBP), Congress passed the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as Title X, to protect families from exposure to lead from paint, dust, and soil. The Office of Housing and Urban Development and the Environmental Protection Agency require the disclosure of known information on LBP and LBP hazards before the sale or lease of most housing built before 1978. If a homeowner chooses to address these lead-based paint hazards,

any renovations, including interim controls, must be performed by certified firms using certified renovators who follow lead-safe work practices.

If the environmental investigation shows the presence of lead, parents/guardians are urged to:

- Use a wet mop at least twice a week to clean the hard surface floors.
- Replace carpet, if possible, with vinyl or ceramic tiles.
- Hose down outside porches often.
- Keep children's hands clean.
- Block children's access to window components with lead paint or lead dust using furniture, plastic, or contact paper.

The environmental investigator will also give the parents valuable information on ways to maintain a lead safe home.

Sources of Lead Poisoning:

- A. Dust on interior surfaces and exterior surfaces close to the house
- B. Paint that is not intact or is subject to friction (e.g. window and door components)
- C. Exposed soil, especially in play areas
- D. Tap water
- E. Other media as appropriate (e.g. toys, vinyl plastic mini-blinds, keys, electrical cords)



B) Medical Assessment

Most children with elevated blood lead levels are asymptomatic although some may exhibit symptoms such as the following:

Mild Toxicity

Myalgia or paresthesia, occasional abdominal discomfort, mild fatigue, irritability, lethargy

Moderate Toxicity

General fatigue, arthralgia, difficulty concentrating, muscular exhaustibility, tremors, headache, diffuse abdominal pain, vomiting, weight loss, constipation, behavioral changes, developmental delays

Acute Lead Encephalopathy

Coma, seizures, bizarre behavior, ataxia, apathy, poor coordination, vomiting, alteration in the state of consciousness, subtle loss of recently acquired skills

A. History

Detailed history is obtained including:

- Presence or absence of clinical symptoms, decrease in play activity, lethargy, anorexia, sporadic vomiting, intermittent abdominal pain, and constipation. With a blood lead level <45 µg/dL, other causes of the symptoms should be sought.
- Document child's mouthing activities and existence of pica.
- Nutritional status (encourage high iron and calcium, low-fat) and dietary habits
- Previous blood lead measurements
- Developmental history/loss of milestones
- Other children in household with EBLs
- Potential sources of lead exposure (as noted on questionnaire)
- Occupational history of adults in the household
- Environmental and occupational histories of adults in other places where the child spends at least 6 hours a week (i.e. daycare or grandparent's residence)

B. Physical Exam

Physical examination should be performed with careful attention given to psychosocial and language development. Neurological examination and prompt referral for any cognitive, speech/language, neurobehavioral or other developmental abnormalities should be made. First Steps Early Intervention Program (FSEIP) can assist with these referrals up to age three or transitioning into the school system. Older children may be referred to the Child Development Clinic at University Mississippi Medical Center (UMMC), Department of Pediatrics or other developmental specialists as indicated.

C. Therapy

Chelation therapy should be performed in a tertiary care center for children in consultation with a toxicologist or other physician who has experience with chelating agents.

C) Nutritional (Dietary) Assessment

MSDH Nutrition Protocol

Lead toxicity interferes with many metabolic processes and normal physiological functions. Lead toxicity induced anemia is due to the inhibition of heme synthesis by lead. Severe cases of toxicity can cause kidney damage and result in excessive urinary nutrient loss. The immune system is depressed and children cannot fight infections efficiently. Although many effects of lead toxicity are reversible, the neurological effects **are not** reversible. Preschool children are at greatest risk due to their higher metabolic rate and efficient gastrointestinal absorption rates of mineral elements. In addition, mouthing behaviors and pica may result in the ingestion of lead chips or dust.

Major Concerns

- Adequacy of diet: calcium, iron, vitamin C and zinc
- Fluid intake
- Anemia
- Normal growth and development
- Potential lead in environment
- Participation in the Women, Infants and Children Program (WIC), if eligible

History and Evaluation:

- Diet history
- Maintain adequate calories and protein with a variety of foods to meet age appropriate nutritional requirements (see the MSDH nutrition guide)
- Maintain adequate intake of vitamin C, calcium, zinc, iron, fluid and fiber
- Plot Height for Age, Weight for Age, and Body Mass Index (BMI for children greater than or equal to two years) on National Center for Health Statistics (NCHS) Growth Charts

Recommended Clinical Therapy

The goal is for a child to achieve normal growth and development and maintain BLLs within acceptable limits. If a child has a venous blood lead level of ≥ 5 $\mu\text{g/dL}$, consult the LPPHHP for guidance.

Follow-Up

Dietary history and assessment should be completed at each follow-up visit especially if chelation therapy is necessary. Assess growth parameters at each follow-up visit.

Nutritional Assessment Summary

A. Test children at risk for anemia e.g., those from low income, migrant or recently arrived refugee families, or those qualifying for the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

- Between 9 and 12 months
- 6 months later
- Annually from ages 2 to 5 years

B. Evaluate the diet of children at risk for anemia, paying particular attention to dietary iron, vitamin C, and calcium.

C. Make recommendations as necessary e.g. WIC, foods rich in iron and vitamin C, etc.

D) Developmental Assessment

Although BLLs peak in early childhood when young children are especially vulnerable to lead, negative effects are associated with lead exposure at any age. Lead has a continuing negative association with IQ as children reach elementary school age. ⁽²⁾

A developmental assessment such as the Denver II or similar tool is used when a child has a blood lead level ≥ 5 $\mu\text{g/dL}$.

Children less than 3 years of age should be referred to an early childhood intervention program if

- The child has an abnormal developmental assessment.
- There is a parental concern.

Long term developmental surveillance of any child with an elevated blood lead level should be conducted.

E) Education

Family Education

Lead poisoning is caused by swallowing or inhaling lead. Lead is a naturally occurring metal, but most lead in the environment is from prior lead use in paint and gasoline. Paint, soil, dust, tap water, some toys, crystal, and pottery can all be sources of lead exposure. Signs and symptoms of lead poisoning may be irritability, nausea, developmental delays, behavior problems, hearing loss, growth failure, seizures and even death. All children are at risk regardless of where they live, socio-economic status, race or ethnicity. Lead poisoning is PREVENTABLE. **Lead publications are available through the MSDH.**

Lead dust from paint may be in carpets/rugs and cloth furniture near windows and plastic mini-blinds and on porches. Lead dust may also be on furniture and car seats used by people who work with lead. **If household environmental lead contamination exists, discuss importance of prevention and risk reduction strategies.**

Activities to decrease child/children's exposure to lead

- Wash hands, using soap and water (or baby wipes).
- Dust surfaces with a damp cloth.
- Keep children away from old painted surfaces and bare soil areas.
- Keep children from touching surfaces in old houses/buildings likely to have lead contaminated dust and dirt: especially porch surfaces, outside steps and ledges, window sills and troughs, and soil near house/building.
- Keep sandboxes and playground equipment away from old houses/buildings.
- Provide plastic chairs for young children sitting outside.
- Avoid food and drinks in imported cans.
- Do not allow children to play with metal house keys, car keys, or electrical cords as they may contain lead.
- Do not dry scrape painted surfaces.

Household Cleaning Recommendations for floors to reduce lead dust

- Wet mop and hose down porches and floors at least two times per week
-Use three buckets/containers when cleaning floors (wash, rinse, and empty). Squeeze dirty mop water into the empty bucket and dump contents into a toilet.
- A wet-dry vacuum cleaner (shop-vac) used in the wet mode after pouring cleaner onto a floor or other hard surface can remove more lead dust from hard surfaces than wet mopping alone.
- Vinyl linoleum is the best flooring because it is easiest to keep clean. Wood floors should be covered with vinyl or coated with polyurethane or enamel paint.
- Using a High-Efficiency Particulate Air (HEPA) vacuum cleaner followed by wet mopping will remove most lead dust from hard surfaces.
- HEPA vacuuming followed by steam cleaning will remove most of the lead dust from carpets and rugs, cloth furniture, and car seats. Using a fine-particle (micron or allergen) bag in a regular vacuum cleaner will help remove more lead dust.
- Discard dirty carpets and rugs, and dirty cloth furniture.
- Cover furniture likely to have lead dust with washable coverings, such as sheets. In old houses, use washable mats and vinyl runners in high traffic areas. Wash mats and runners at least twice a week.

Abatement and Remediation

Abatement is the controlled removal or enclosure of lead-based paint. It **MUST** be done by a professional certified by the Mississippi Department of Environmental Quality (DEQ). DEQ's phone number is **601-961-5171**. Advise family members **NOT** to sand or scrape old paint themselves.

Other Sources of Lead Exposure

- Keep lead fishing sinkers, car and truck batteries and radiators in places not accessible to children.
- Any family member or regular visitor who might be exposed to lead should change work clothes, shoes and shower at work. (See table to right) If this is not possible at work, then as soon as arriving home. Be careful not to contaminate clothes, bedding, furniture, car interior, steps, and floors that children might touch. Lead-contaminated clothes should be stored in plastic bags and washed **SEPARATELY** from other clothes.
- Avoid ceramic ware (especially if imported from China, Mexico, Italy, or South Asia).

List of Jobs/Hobbies that may involve lead:

1. Paint removal, includes: sandblasting, scraping, abrasive blasting, sanding, or using a heat gun or torch
2. Chemical strippers
3. Remodeling, repairing, or renovating buildings or dwellings, or tearing down buildings or metal structures (demolition)
4. Plumbing
5. Repairing radiators, tire balancing
6. Melting metal for reuse (smelting)
7. Welding, burning, cutting, or torch work
8. Pouring molten metal (foundries)
9. Auto body repair
10. Making paint or pigment
11. Painting
12. Salvaging metal or batteries
13. Making or splicing cable or wire
14. Creating explosives, ammunition, or fishing sinkers
15. Making or repairing jewelry
16. Making pottery
17. Building, repairing, or painting ships
18. Working in a chemical plant, glass factory, oil refinery, or any other work involving lead

- Metal house and car keys and electrical cords may have lead. Do not let children play with them.
- Old bathtubs and sinks often have lead.

Additional Recommendations for Cleaning Lead Dust

- Window sills should be smooth and cleaned often with an all-purpose cleaner.
- Keep windows closed and cover window troughs with aluminum coil stock.
- Cover peeling paint on window sills with plastic tape, contact paper or plastic sheeting.
- Routinely dust to help alleviate accumulated household dust.
- Remove vinyl, plastic mini-blinds bought before 1997.
- Avoid growing vegetables in soil near old houses/buildings or near old painted fences.

IV. Case Closure

The ultimate objectives of the care coordination process are 1) to assure the medical treatment of the lead poisoned child and 2) that the environmental exposure routes (sources) are addressed. There are potentially two different forms of case closure.

- **Medical closure:** defined as one venous BLL < 5 µg/dL.
- **Administrative closure:** Indicates the child will no longer be followed. The case manager must determine if an administrative closure is appropriate.

Reasons for administrative closure include:

1. The blood lead level has decreased appropriately. The child is **not** currently in a lead safe environment; however, steps are being taken to address lead exposure routes.
 2. Factors unrelated to the medical or environmental circumstances:
 - The child is lost to follow up after three varied attempts to locate.*
 - The child has missed three consecutive clinic appointments.
 - The child has moved out of the health jurisdiction.
 - The parent has refused services and has been given information about EBLs and lead hazard control.
 - Repeat visits are too dangerous due to weapons, drug dealing, etc. (Appropriate referrals should be made.)
- * Three varied attempts to locate the child can include any of the following:
- letter
 - certified letter
 - home visit
 - contact with other programs/agencies (WIC, Medicaid, healthcare provider)
 - contact the Post Office/providers for a forwarding address
 - consult with the contact person given during admission

V. Healthy Homes

The National Center for Healthy Housing defines a healthy home as one that is designed, constructed, maintained, or rehabilitated in a manner that supports the health of residents. Housing affects health directly and indirectly. Young children spend nearly 80 - 90% of their time indoors. The lack of structural and safety features in homes can increase the risk of elevated lead levels, mold, mildew, injuries, fires, burns, falls, and poor indoor air quality. Inadequate and unhealthy housing disproportionately affects children and families, resulting in health disparities among populations that have the fewest resources. Creating healthier housing promotes the growth and development of children and can decrease healthcare costs.

Children's developing bodies can be more susceptible to the effects of environmental contaminants. Their respiratory, immune, nervous, reproductive, and skeletal systems continue to develop throughout childhood. Exposure to environmental contaminants that occur early in life can cause adverse health outcomes that can have implications well into adulthood.

Evidence has shown that toxic substances, harmful gases, and indoor air pollutants (i.e., carbon monoxide and secondhand smoke) are at least ten times greater indoors than outdoors. These environmental hazards have a tremendous impact on the health of young children. Pollutants in the home environment directly affect the health of infants and toddlers, whose developing neurological, cognitive, and motor skills make them most sensitive to pollutants. Substandard housing is the nation's number one environmental health threat to young children.

Seven Principles of a Healthy Home are:

Keep It...

- Dry
 - Dry homes minimize moisture and mold which can trigger asthma attacks.
 - Prevent mold and water damage and deter roaches, mice, and other pests by checking your plumbing, roof and draining systems for leaks.
- Clean
 - Clean homes have minimal dust and clutter. Clean homes help reduce pest infestations and exposure to contaminants.
- Ventilated
 - Supply fresh air and eliminate the concentrations of radon, carbon monoxide and tobacco smoke in your home. Increasing the fresh air supply in a home improves respiratory health.
- Pest Free
 - Seal cracks and openings to prevent insects and rodents from entering your home. Keeping out cockroaches, mice, and other pests can help prevent asthma attacks and reduce the need for pesticides in your home.

- Contaminate Free
 - Reduce the exposure to lead and other contaminants in your home. Lead is a major concern for homes but contaminants such as radon gas, carbon monoxide, and second-hand tobacco smoke can collect indoors and become health hazards.
- Safe
 - Install smoke/carbon monoxide detectors and fire extinguishers while taking other safety measures to prevent injuries. Most children's injuries occur in the home. Falls are the most frequent cause, followed by injuries from objects, burns, and poisonings.
- Maintained
 - Inspect, clean and repair your home routinely. Poorly maintained homes are at risk for moisture and pest problems.

VI. References

1. American Academy of Pediatrics Committee on Environmental Health. Lead Exposure in Children: Prevention, Detection and Management. *Pediatrics* 2005; 116:1036-46.
2. Centers for Disease Control and Prevention. (March 2002) *Managing Elevated Blood Lead Levels Among Young Children: Recommendations From the Advisory Committee on Childhood Lead Poisoning Prevention*. Atlanta, GA: Centers for Disease Control and Prevention; 2002. Available at: www.cdc.gov/nceh/lead/CaseManagement/caseManage_main.htm. Accessed August 24, 2016.
3. Centers for Disease Control and Prevention. (March 2002) *Managing Elevated Blood Lead Levels Among Young Children: Recommendations From the Advisory Committee on Childhood Lead Poisoning Prevention*. Atlanta, GA: Centers for Disease Control and Prevention; 2002. Available at <http://www.cdc.gov/nceh/lead/casemanagement/managingEBLLs.pdf>. Accessed September 6, 2016.

APPENDIX A: Roles and Responsibilities for Providing Care Coordination Services

Public Health Department/ Cool Kids Provider Role	Primary Care Medical Provider Role	Lead Care Coordinator/LPPHHP Role
Confirmed Blood Lead Levels 5 – 14 µg/dL		
<ol style="list-style-type: none"> 1. Inform family of EBLL. 2. Provide anticipatory guidance. 3. Provide hazard and risk reduction education to family. 4. Include history of EBLL as a part of permanent medical problem list in the child’s medical record. 5. Obtain developmental screening (i.e.: Denver II). 6. Evaluate iron status with Hct/Hgb testing and provide appropriate treatment as indicated. 7. Repeat BLL testing every three months, until two venous results < 5µg/dL, or three results < 15 µg/dL, then annually. 	<ol style="list-style-type: none"> 1. Include history of EBLL as part of permanent medical problem list in the child’s medical record. 2. If child is not receiving medical services through public health department, proceed as follows: <ul style="list-style-type: none"> • Inform family of EBLL. • Provide anticipatory guidance. • Provide hazard and risk reduction education to family. • Include history of EBLL as a part of permanent medical problem list in the child’s medical record. • Obtain developmental screening (i.e.: Denver II). • Evaluate iron status with Hct/Hgb testing and provide appropriate treatment as indicated. 3. Refer to nutritionist for nutritional counseling. 	<ol style="list-style-type: none"> 1. Inform Primary Care Provider of EBLL results. 2. Encourage family compliance with BLL testing schedule.

Source: MSLPPHHP

Public Health Department/ Cool Kids Provider Role	Primary Care Medical Provider Role	Lead Care Coordinator/LPPHHP Role
Confirmed Blood Lead Levels 15 – 19 µg/dL		
<ol style="list-style-type: none"> 1. Inform family of EBLL. 2. Provide anticipatory guidance. 3. Provide hazard and risk reduction education to family. 4. Include history of EBLL as a part of permanent medical problem list in the child's medical record. 5. Obtain developmental screening (i.e.: Denver II). 6. Evaluate iron status with Hct/Hgb testing and appropriate treatment as indicated. 7. Repeat BLL testing every three months until two venous results, < 5 µg/dL, or three results < 15 µg/dL, then annually. If BLL remains 15 – 19 µg/dL after 6 months, repeat annually, and case should be treated as BLL 20-44 µg/dL. 	<ol style="list-style-type: none"> 1. Include history of EBLL as a part of permanent medical problem list in the child's medical record. 2. If child is not receiving medical services through public health department, proceed as follows: <ul style="list-style-type: none"> • Inform family of EBLL. • Provide anticipatory guidance. • Provide hazard and risk reduction education to family. • Include history of EBLL as a part of permanent medical problem list in the child's medical record. • Obtain developmental screening (i.e.: Denver II). • Evaluate iron status with Hct/Hgb testing and provide appropriate treatment as indicated. 3. Refer to nutritionist for nutritional counseling. 	<ol style="list-style-type: none"> 1. Consult with MSDH Clinician and inform child's Primary Care Provider. 2. Inform primary care provider of EBLL results. 3. Within two weeks of receipt of EBLL results, a home visit by a qualified individual is conducted using the appropriate form. A copy of the assessment form will be forwarded to the LPPHHP environmentalist and the child's primary care provider. 4. Encourage family compliance with BLL testing schedule. 5. For children with persistent BLLs 15-19 µg/dL or anything > 20µg/dL, referrals will be made for environmental investigation. 6. If BLL persists at 15 – 19 µg/dL, Lead Case Manager initiates services specified for children with BLL 20 – 44 µg/dL.

Source: MSLPPHHP

Public Health Department/ Cool Kids Provider Role	Primary Care Medical Provider Role	Lead Care Coordinator/LPPHHP Role
Confirmed Blood Lead Levels 20 – 44 µg/dL		
<ol style="list-style-type: none"> 1. Inform family of EBLL. 2. Provide anticipatory guidance. 3. Provide hazard and risk reduction education to family. 4. Include history of EBLL as a part permanent problem list in child's medical record. 5. Obtain developmental screening (i.e.: Denver II). 6. Evaluate iron status with Hct/Hgb testing and appropriate treatment as indicated. 7. Screen other children in household <6 years old. 8. Repeat BLL in one to two month intervals for six months until these three conditions are met: a) BLL has remained < 15 µg/dL, for the entire six months and b) lead hazards have been removed or child lives in a lead-safe environment, and c) no new exposure, then retest annually. 9. If BLL remains between 20 – 44 µg/dL, after six months, refer to State LPPHHP for additional environmental follow-up. 	<ol style="list-style-type: none"> 1. Include history of EBLL as a part of permanent problem list in the child's medical record. 2. If child is not receiving medical services through public health department, proceed as follows: <ul style="list-style-type: none"> • Inform family of EBLL. • Provide anticipatory guidance. • Provide hazard and risk reduction education to family. • Include history of EBLL as a part of permanent medical problem list in the child's medical record. • Obtain developmental screening (i.e.: Denver II). • Evaluate iron status with Hct/Hgb testing and provide appropriate treatment as indicated. 3. Refer to nutritionist for nutritional counseling. 	<ol style="list-style-type: none"> 1. Consult MSDH clinician and inform child's Primary Care Provider. 2. Within two weeks of receipt of EBLL results, a home visit by a qualified individual is conducted using the appropriate form. A copy of the assessment form will be forwarded to the LPPHHP environmentalist and the child's primary care provider. 3. Within one week, a referral will be made to the State Environmentalist for an environmental home investigation. The State Environmentalist will communicate the results of the investigation to the family. 4. LPPHHP will develop a written Plan of Care for the family to include hazard education, encouragement of compliance, BLL testing schedule, referrals for social, developmental, nutritional, housing remediation, and other services as appropriate. 5. Monitor progress toward achievement of Plan of Care goals at least quarterly. 6. Conduct a home visit before case closure. Review case and close case when criteria have been met for discharge and LPPHHP notifies primary care provider and family of discharge.

Source: MSLPPHHP

Public Health Department/ Cool Kids Provider Role	Primary Care Medical Provider Role	Lead Care Coordinator/LPPHHP Role
Confirmed Blood Lead Levels 45 – 69 µg/dL		
<ol style="list-style-type: none"> 1. Inform family of EBLL. 2. Provide anticipatory guidance. 3. Provide hazard and risk reduction education to family. 4. Include history of EBLL as a part of permanent problem list in the child’s medical record. 5. Obtain developmental screening (i.e.: Denver II). 6. Evaluate iron status with Hct/Hgb testing and appropriate treatment as indicated. 7. Screen other children in household <6 years old. 8. Encourage compliance with BLL testing schedule. 	<ol style="list-style-type: none"> 1. Complete medical and history exam. 2. Evaluate iron status with Hct/Hgb testing and appropriate treatment as indicated. 3. Consider referral to a toxicologist or other physician associated with a children’s tertiary care center who has experience with the use of chelating agents. 4. Repeat BLL within one to two-month intervals for 6 months or until the following criteria are met: <ol style="list-style-type: none"> a) BLL has remained < 15 µg/dL for the entire 6 months and b) lead hazards have been addressed c) annually after (a) and (b) have been met. 5. If BLL remains between 20-44 µg/dL after 6 months, refer to State LPPHHP for additional follow-up. 	<ol style="list-style-type: none"> 1. Consult MSDH clinician and inform child’s Primary Care Provider of EBLL. 2. Immediately Refer to Primary Care Provider for complete medical history, physical exam, developmental screening. 3. Within 48 hours of receipt of EBLL results, a home visit by a qualified individual is conducted using the appropriate form. A copy of the assessment form will be forwarded to the LPPHHP environmentalist and the child’s primary care provider. 4. Refer to Early Intervention Program for developmental evaluations. 5. Results of all home assessments and evaluations will be forwarded to the primary care provider. 6. Within 48 hours, an environmental investigation will be completed and the State environmentalist will be responsible for communicating the results to the family and providing a copy of the report to the child’s primary care provider. 7. LPPHHP will develop a written plan of care for the family including hazard education, encouragement of compliance with BLL testing schedule, referrals for social, developmental, nutritional, housing remediation, and other services as appropriate. 8. Monitor progress toward achievement of Plan of Care quarterly. 9. Conduct a home visit before case closure. Review case and close case when criteria for discharge have been met. Notify Primary Care Provider and family of discharge.

Source: MSLPPHHP

Public Health Department/ Cool Kids Provider Role	Primary Care Medical Provider Role	Lead Care Coordinator/LPPHHP Role
Confirmed Blood Lead Levels $\geq 70 \mu\text{g/dL}$		
<ol style="list-style-type: none"> 1. Inform family of EBLL. 2. Provide anticipatory guidance. 3. Provide hazard and risk reduction education to family. 4. Include history of EBLL as a part of permanent problem list in the child's medical record. 5. Obtain developmental screening (i.e.: Denver II). 6. Evaluation of iron status and Hct/Hgb testing will be performed as part of medical management since lead level of $\geq 70 \mu\text{g/dL}$ is a medical emergency. 7. Screen other children in household <6 years old. 8. Encourage compliance with BLL testing schedule. 	<ol style="list-style-type: none"> 1. Consider referral to a toxicologist or other physician associated with a children's tertiary care center who has experience with the use of chelating agents. 2. If chelation is used, notify LPPHHP immediately. 3. Repeat BLL within one to two month intervals for six months or until the following criteria are met: <ol style="list-style-type: none"> a) BLL has remained $< 15 \mu\text{g/dL}$ for the entire six months and b) lead hazards have been addressed c) annually after (a) and (b) have been met 4. If BLL remains between 20-44 $\mu\text{g/dL}$ after six months, refer to State CLPPP for additional environmental follow-up. 5. Evaluate iron status with Hct/Hgb testing and appropriate treatment as indicated. 	<ol style="list-style-type: none"> 1. Medical Emergency – Consult with MSDH Clinician. 2. Notify Child's Primary Care Provider immediately. 3. Within 24 hours of receipt of EBLL results, a home visit by a qualified individual is conducted using the appropriate form. A copy of the assessment form will be forwarded to the LPPHHP environmentalist and the child's primary care provider. 4. Refer to Early Intervention Program for developmental evaluations. 5. Results of all home assessments and evaluations will be forwarded to the primary care provider. 6. Within 48 hours, environmental investigation will be completed, and the State environmentalist will be responsible for communicating the results to the family and providing a copy of the report to the child's primary care provider. 7. LPPHHP will develop a written plan of care for the family including hazard education, encouragement of compliance with BLL testing schedule, referrals for social, developmental, nutritional, housing remediation, and other services as appropriate. 8. Monitor progress toward achievement of Plan of Care quarterly. 9. Conduct a home visit before case closure. Review and close case when criteria for discharge have been met. Notify Primary Care Provider and family of discharge.

Source: MSLPPHHP

APPENDIX B

Physician/Clinician Recommendations on Management of Childhood Lead Exposure and Poisoning

1. Physician/Clinician should test asymptomatic children for elevated blood lead concentrations according to federal, local, and state requirements. Immigrant, refugee, and internationally adopted children also should be tested for blood lead concentrations when they arrive in the United States because of their increased risk. Blood lead tests do not need to be duplicated, but the pediatrician or other primary care provider should attempt to verify that screening was performed elsewhere and determine the result before testing is deferred during the office visit.
2. Physician/Clinician should test children for elevated blood lead concentrations if they live in or visit a home or child care facility with an identified lead hazard or a home built before 1960 that is in poor repair or was renovated in the past 6 months.
3. Physician/Clinician should routinely recommend individual environmental assessments of older housing, particularly if a family resides in a housing unit built before 1960 that has undergone recent renovation, repair, or painting or that has been poorly maintained.
4. Physician/Clinician should advocate for the promulgation and enforcement of strict legal standards based on empirical data that regulate allowable levels of lead in air, water, soil, house dust, and consumer products.
5. Physician/Clinician should be familiar with collection and interpretation of reports of lead hazards found in house dust, soil, paint and water, or they should be able to refer families to a pediatrician, health care provider, or specialist who is familiar with these tools.
6. Physician/Clinician should be familiar with federal, state, local, and professional recommendations or requirements for screening children and pregnant women for lead poisoning.
7. Physician/Clinician should conduct screening of children for elevated blood lead concentrations if they are 12 to 24 months of age and live in communities or census block groups with $\geq 25\%$ of housing built before 1960 or a prevalence of children's blood lead concentrations $\geq 5\mu\text{g/dL}$ (≥ 50 ppb) of $\geq 5\%$.

Adapted from AAP Policy Statement on Prevention of Childhood Lead Toxicity, July 2016