

**Guidelines for Follow-up of Children with
Elevated Blood Lead Levels for
Local Health Department
Lead Poisoning Prevention Programs**

**New York State Department of Health
Lead Poisoning Prevention Program**

August 2009

Table of Contents

| | | |
|-----------|--|------------|
| 1. | Background | 1-1 |
| 2. | Roles and Responsibilities of Local Health Departments | 2-1 |
| 3. | Coordination of Follow-up Services | 3-1 |
| | A. Confirming Elevated Capillary Lead Tests | 3-1 |
| | B. Follow –Up Actions Based on Confirmed Blood Levels | 3-2 |
| | C. Discharge from Follow-Up Services Criteria | 3-7 |
| | 1. Medical | 3-7 |
| | 2. Refusal of Service | 3-8 |
| | 3. Lost to Follow-up | 3-8 |
| | 4. Expired | 3-8 |
| | 5. Relocate Out of State | 3-9 |
| | 6. Transfer to Another County | 3-9 |
| | D. Data Management | 3-10 |
| | E. Sliding Fee Scale | 3-11 |
| | F. Confidentiality | 3-11 |
| | G. Policies and Procedures | 3-12 |
| 4. | Modified Protocol for Follow-up of Children age Six to Eighteen Years with Elevated Blood Lead Levels | 4-1 |
| | A. Confirming Elevated Capillary Lead Tests | 4-2 |
| | B. Follow Up Actions Based Upon Confirmed BLL | 4-3 |
| | C. LHD Modified Protocol | 4-3 |
| | D. Discharge from Follow-Up Services | 4-7 |
| | Attachment A: Health Care Provider Interview Tool | 4-9 |
| | Attachment B: Parent/Caregiver Interview Tool | 4-11 |
| | Attachment C: DOH 1333 Environmental Lead Investigation | 4-17 |
| 5. | References | 5-1 |
| 6. | Abbreviations | 6-1 |

Table of Contents (continued)

| | | |
|-----------|--|------------|
| 7. | Appendices | 7-1 |
| | A. Ethnic Spices, Herbs and Cosmetics Containing Lead | 7-2 |
| | B. Sources of Lead | 7-4 |
| | C. Roles and Responsibilities of the Health Care Providers | 7-5 |
| | D. Risk Assessment Questions | 7-7 |
| | E. Anticipatory Guidance | 7-8 |
| | F. Developmental Screening | 7-11 |
| | G: Occupational Health Clinics | 7-13 |
| | H. Capillary Blood Sampling Protocol | 7-15 |

**Guidelines for Follow-up of Children with
Elevated Blood Lead Levels for
Local Health Departments
Lead Poisoning Prevention Programs**

The New York State Department of Health (NYSDOH) Lead Poisoning Prevention Program (LPPP) has developed these guidelines for follow-up of children with elevated blood lead levels (EBLLs) as a resource for local health department (LHD) Lead Poisoning Prevention Programs. These guidelines reflect amendments to the New York State Department of Health Administrative Rules and Regulations, Subpart 67 adopted on May 6, 2009 and the Centers for Disease Control and Prevention (CDC) recommendations on *Managing Elevated Blood Lead Levels in Children* (2002).

I. Background

Childhood lead poisoning is a preventable, serious environmental health problem. Lead exposure is recognized as one of the most common environmental toxins for young children. The primary way in which most children are exposed to harmful levels of lead is through contact with deteriorating lead paint and lead contaminated dust. The typical hand-to-mouth activity of young children provides the pathway for lead to enter the body.

In most cases, children are exposed to lead by ingesting lead paint chips or dust contaminated by deteriorating lead paint. Interior dust can become contaminated with lead as the result of chipped or peeling paint in older dwellings (pre-1978 housing), friction caused by opening and closing windows with lead paint, or through the disturbance of lead paint during preparation of paint surfaces for repainting, paint removal, or remodeling. Less commonly, secondary sources such as water contaminated by its flow through lead pipes or brass fixtures, soil contaminated by lead dust, and certain consumer products that contain lead can be significant contributory sources. Other sources contributing to lead poisoning can include lead-glazed ceramic ware, certain ethnic spices, foods and cosmetics (Appendix A).

People in certain occupations such as painters, plumbers, mechanics, or construction workers may come into contact with lead on the job and bring it home on their skin and clothes. Hobbies that use lead, such as making pottery or stained glass, refinishing furniture, making lead figurines, using indoor firing ranges or loading homemade ammunitions can also be a source of exposure for children (Appendix B).

Young children's systems absorb lead more efficiently than those of adults. Some of the protective mechanisms that are well developed in adults are immature in young children, thereby making them more vulnerable to the effects of some toxic chemicals (Bearer, 1995). Increased lead levels or chronic exposure can have long-lasting effects on children, families and communities. Exposure to even small amounts of lead can contribute to behavior problems, learning disabilities, and lowered intelligence (Lidsky & Schneider, 2003). While lead poisoning

prevention efforts primarily target young children under age six years, harmful effects are associated with exposure to lead at any age (CDC, 2007).

Exposure to lead is associated with a range of serious health effects on young children. Lead is a systemic toxin that affects virtually all body systems. Lead exposure has been associated with anemia, hearing loss, diminished skeletal growth and delayed pubertal development, dental caries, hypertension, osteoporosis, pregnancy complications and low birth weight. Lead exposure is an important cause of preventable brain injury and neurodevelopmental dysfunction that is associated with detrimental effects on children's cognitive and behavioral development, including measurable declines in IQ. Although there is no established threshold for the harmful effects of lead, the federal Centers for Disease Control and Prevention (CDC) has defined a BLL of ≥ 10 mcg/dL as the definition of lead poisoning (elevated blood lead level, or "EBLL") and the action level for public health intervention.

2. Roles and Responsibilities of Local Health Departments

The roles and responsibilities of local health departments (LHDs) regarding identification and coordination of follow-up services for children with elevated blood lead levels (EBLLs) are defined in NYCRR Title 10 Subpart 67-1. As defined in 67-1.6, local health departments shall:

- Provide blood lead screening or arrange for blood lead screening for each child who requires screening and whose parent or guardian is unable to obtain a lead test for their child because the child is uninsured or the child's insurance does not cover lead screening.
- Establish a sliding fee schedule for blood lead screening of children from families with incomes in excess of 200% of the federal poverty level, pursuant to Section 606 of the Public Health Law, and collect fees for blood lead testing from third party payers, when available.
- Provide environmental management for children with confirmed blood lead levels (BLLs) \geq 15 mcg/dL. (Note: On May 6, 2009, the NYS Code of Rule and Regulations Part 67-1 was revised to lower the blood lead level requiring environmental management and other specified follow-up services from 20 to 15 mcg/dL, and to clarify that follow-up services are required for all children aged birth to 18 years with elevated blood lead levels. These changes became effective on June 20, 2009.)
- Provide data to identify exposure patterns and high risk populations for strategic planning for lead poisoning prevention at the state and local levels.
- Institute measures to identify and track children with elevated blood lead levels (EBLLs) to assure appropriate follow-up.
- Local health departments who serve as a child's primary health care provider shall carry out activities in accordance with paragraphs (1) through (9) of section 67-1.2(a). (See Appendix C, D, E).

LHDs' responsibilities for case identification and tracking of follow up services are performed with the use of the NYSDOH's LeadWeb system or other approved systems. All blood lead test results are currently reported to the NYSDOH by laboratories certified to conduct lead testing. The enacted 2009-2010 State Budget authorized changes to Public Health Law 1370 and 2168 regarding collection, store and access of any authorized lead data in the Department's New York State Immunization Information System (NYSIIS). The NYSDOH is developing a process which will be available in the near future that will allow physician office

laboratories (POLs) to submit reports for blood lead tests on children less than eighteen years of age electronically through the New York State Immunization Information System (NYSIIS).

Blood lead test results for all children aged birth up to 18 years are uploaded daily into LeadWeb for download by the appropriate LHD. As specified in the annual LPPP work plan activities, LHDs are required to pre-screen all records in LeadWeb daily to assure timely and appropriate follow-up for children with elevated blood lead levels, and to match all records in LeadWeb or other currently approved local data systems at least weekly. Performing a daily match of children with EBLLs will help to avoid a delay in appropriate and timely interventions. The matching process assures that children with blood lead test results are assigned to the appropriate county where they reside. This also ensures that all children tested in a county in a given year are included in the annual surveillance data for that county.

LHD lead programs are responsible for tracking all children with BLLs ≥ 10 mcg/dL to assure that appropriate follow-up services are provided. Current New York State regulations define “follow-up” as actions by LHDs and health care providers which, depending on the child’s blood lead level and exposure history, include as appropriate.¹

- Confirmatory and follow-up blood lead testing;
- Risk reduction education;
- Nutritional counseling;
- Diagnostic evaluation which includes a detailed lead exposure assessment, a nutritional assessment including iron status, and developmental screening;
- Medical treatment, if necessary;
- Environmental management; and
- Case management.

To meet their responsibilities, LHD lead programs work in coordination with other team members, who may include the child’s parent(s) or guardian(s), the child’s health care provider(s), other LHD program staff and LHD or NYSDOH District Office (DO) environmental health staff, and other health professionals as needed. Details regarding specific follow-up

¹ 10 NYCRR 67-1.1(f) and 67.1.2(a)

services required at different blood lead levels are described in Section 3 of this document. In addition, a complete summary of the roles and responsibilities of health care providers for lead testing and follow-up of children is included in Appendix C.

LHD lead programs do not have to directly provide all follow-up services, but are responsible for tracking and documenting that required interventions have occurred. This can be accomplished either by documenting appropriate follow-up by health care providers (HCPs), by directly providing the necessary follow-up services, or by a combination of the two. In instances when a LHD serves as the primary care provider for a child, the LHD is responsible for directly providing required follow-up services. Establishing collaborative working relationships with HCPs is essential for effective case coordination at the local level. This type of cooperative approach is needed in order to assure that all follow-up activities are completed to decrease the child's BLL, and to correct lead hazards in the child's environment.

LHD programs also make referrals through LeadWeb or other currently approved local data systems to LHDs or NYSDOH District Office (DO) environmental health programs for environmental management of all children with BLLs \geq 15 mcg/dL. Communication and collaboration between lead program staff and LHD or NYSDOH DO environmental staff is necessary for effective coordination of services for children with elevated blood lead levels who require environmental management.

The goal of follow-up for children with EBLLs is to coordinate the services required to reduce children's BLLs below the current level of concern of 10 mcg/dL as defined by the Centers for Disease Control and Prevention (CDC), and to identify and reduce potential sources of lead exposure in children's environments to prevent further lead exposure. LHD program staff responsible for case coordination must have appropriate training and experience and function within the scope of their professional responsibilities and training.

3. Coordination of Follow-up Services

This section describes the specific follow-up actions that are needed for children with elevated blood lead levels (EBLLs). These include: confirming elevated capillary test results, actions based on confirmed blood lead levels, and use of criteria for discharge from follow-up services.

A. Confirming Elevated Capillary Lead Tests

Specimens obtained via venous blood lead testing are the preferred specimens for blood lead analysis and should be used for lead measurement whenever practicable. Capillary testing is an acceptable method for initial blood lead screening if appropriate methods are followed to minimize risk of contamination (see Appendix H). Venous blood samples must be used to confirm all elevated capillary blood lead level (BLL) results, i.e. if a BLL result ≥ 10 mcg/dL is obtained on a capillary specimen, the child must be retested using a venous blood sample as a confirmatory (diagnostic) test. (Note: On May 6, 2009, the NYS Code of Rule and Regulations Part 67-1 was changed requiring health care providers to confirm capillary blood lead results equal to or greater than 10 mcg/dL in place of the current requirement of 15 mcg/dL or greater. This change became effective June 20, 2009.)

LHD programs with relevant experience and expertise may choose to offer training to HCPs interested in learning how to correctly draw capillary specimens. This type of training may help to limit environmental contamination, improve the quality of capillary specimens, and increase lead testing rates for children in accordance with NYS testing requirements.

Table 1 summarizes the schedule for obtaining confirmatory venous samples when initial capillary sample results are elevated, based on CDC guidelines. Confirmatory testing should be performed in accordance with the timeframes noted in **Table 1**. The higher the BLL on the capillary screening test, the more urgent is the need for confirmatory venous testing so that appropriate follow-up services can be initiated.

Any blood lead sample analyzed using LeadCare® (sometimes referred to as LeadCare I) or filter paper methods, regardless of sample type, also requires confirmatory venous testing by a permitted reference laboratory for any BLL \geq 10 mcg/dL. Any blood lead sample analyzed using LeadCare II® with a BLL result \geq 8 mcg/dL, regardless of sample type, should be confirmed with a venous sample analyzed by a permitted reference laboratory. As specified in regulations, HCPs are responsible for confirming elevated capillary blood lead test results, while LHDs are responsible for identifying and tracking children with elevated capillary results to assure that confirmatory testing is completed. LHDs should confer with HCPs to ascertain that they are aware of the recommended schedule for obtaining confirmatory tests and to ensure plans are in place to obtain them. HCPs should be advised that the earlier a confirmed EBLL is obtained, the sooner an environmental investigation can be initiated if one is required. Although the following table provides guidance for maximum acceptable timeframes to confirm elevated capillary lead tests, it should be noted that the higher the capillary blood lead test result, the more urgent the need for confirmatory capillary testing.

Table 1. Timeframe for Confirming Elevated Capillary Lead Tests

| Capillary blood lead level (BLL) | Perform confirmatory venous analysis within: |
|---|---|
| 10-14 mcg/dL | Confirm lead level within 3 months |
| 15-44 mcg/dL | Confirm lead level within 1 week – 1 month* |
| 45-59 mcg/dL | Confirm lead level within 48 hours |
| 60-69 mcg/dL | Confirm lead level within 24 hours |
| \geq 70 mcg/dL | Confirm lead level immediately as an emergency test |

*The higher the BLL on the screening test, the more urgent the need for confirmatory testing.
Adapted from Table 3.3 Recommended Schedule for Obtaining a Confirmatory Venous Sample; CDC Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Atlanta: CDC; 2002.

B. Follow-up Actions Based on Confirmed Blood Lead Levels

The specific follow-up activities required for responding to EBLLs depend on the confirmed BLL category. As described in Section A above, elevated screening results based on capillary samples should be confirmed using venous blood samples in accordance with **Table 1**.

Whenever possible, follow-up actions should be based on confirmed venous blood lead test results. However, necessary follow-up services should not be delayed due to barriers to accomplishing confirmatory venous testing. Additionally, if other young children or siblings are living in, or spending significant amounts of time in, the same dwelling(s) as a child with an EBLL, LHDs should advise the parents or guardians to contact those children's HCPs for blood lead testing.

Coordination of timely and appropriate follow-up services for children with EBLLs requires HCPs and LHDs to work together collaboratively to address the needs of children with elevated blood lead levels. HCPs are responsible for the direct medical management and follow-up of children with EBLLs. LHDs are responsible for identifying and tracking children with EBLLs to assure that all necessary follow-up services are provided. This can be accomplished by documenting that appropriate follow-up was done by HCPs, by providing the necessary follow-up services, or by a combination of the two. In instances when a LHD serves as the primary care provider for a child, the LHD is responsible for directly providing required follow-up services. Follow-up activities must be completed within the timeframes listed below in **Tables 2 and 3**.

LHDs are also responsible for providing environmental management for children with BLLs ≥ 15 mcg/dL, or in partial service counties, for referring children with BLLs ≥ 15 mcg/dL to the NYSDOH District Office (DO) for environmental management. (Note: On May 6, 2009, the NYS Code of Rule and Regulations Part 67-1 was amended to lower the blood lead level requiring environmental intervention from 20 to 15 mcg/dL. This change became effective on June 20, 2009). LHD lead programs should make referrals to the LHD or NYSDOH DO for environmental management through the LeadWeb system or other approved local data systems. Specific requirements for environmental management are detailed in NYSDOH Environmental Health Procedure Manual, CSFP 720. If an environmental investigation is needed, it must be completed for all dwellings and other settings where the child spends a significant amount of time, including child care facilities (center and home-based settings). The NYSDOH Environmental Health Procedure Manual, CSFP 720, defines a significant amount of time as greater than eight hours per week. There should be formal procedures for conducting required

environmental management following the applicable procedures and technical references contained in the NYSDOH Environmental Health Procedure Manual, CSFP 720. Please refer to this manual for additional detail on environmental follow-up services. Any relevant issues or problems that may be identified during home visits should be brought to the HCP's attention, i.e. nature of lead source, if identified, and/or presence of any uncorrected environmental hazard conditions.

Tables 2 and 3 outline specific follow-up actions for children with confirmed (venous) elevated blood lead levels by blood lead level categories, consistent with current CDC guidelines (2002). **Table 2** specifies the follow-up testing schedule to monitor blood lead levels for children with confirmed EBLLs. **Table 3** specifies additional required follow-up activities based on confirmed blood lead levels. All follow-up activities should be initiated as soon as reasonably possible, not to exceed the specified timeframes noted in **Tables 2 and 3**. The higher the initial blood lead level, the sooner follow-up testing and other follow-up activities should occur. The timeframes stated for the initiation of environmental investigations in **Table 3** refer to the start of the investigation process and not necessarily the date of an environmental inspection. Priority for conducting environmental investigations and environmental inspections should be given to the cases with the highest blood lead levels.

Table 2. Follow-up Blood Lead Testing Schedule for Children

| Venous Blood Lead Level | Early Follow-up Testing (first 2-4 tests after identification) | Late Follow-up Testing (after BLL begins to decline) |
|--------------------------------|--|--|
| 10-14 mcg/dL | 3 months | 6-9 months |
| 15-19 mcg/dL | 1-3 months | 3-6 months |
| 20-24 mcg/dL | 1-3 months | 1-3 months |
| 25-44 mcg/dL | 2 weeks -1 month | 1 month |
| ≥ 45 mcg/dL | As soon as possible | Chelation with subsequent follow-up |

Adapted from Table 3.4 Recommended Schedule for Follow-Up blood Lead Testing; CDC Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Atlanta: CDC; 2002.

Additional Considerations:

- LHD program staff may recommend to HCPs that confirmatory or follow-up blood lead testing be done sooner if assessments or other circumstances warrant earlier testing. However, confirmatory and follow-up testing should not exceed timeframes specified in Tables 1 and 2 respectively.
- Seasonal variation of BLLs may necessitate more frequent follow-up testing during the summer months to assure BLLs are not rising rapidly.
- HCPs may choose to repeat blood lead tests within one month on patients newly identified with EBLLs or for children less than 12 months of age to assure BLLs are not rising rapidly.
- If developmental delays are suspected, HCPs should refer children (0-3 years) to the LHD Early Intervention Program (EIP) if parents do not object. For children older than three years with suspected developmental delays, HCPs should instruct the parents or guardians to contact their local school districts.

| Table 3. Follow-up Actions Based on Confirmed Blood Lead Levels Children Aged Birth to Less Than Eighteen Years | | |
|--|---|---|
| Confirmed Blood Lead Level (BLL) | Timeframe for Action | Follow-up Actions |
| 10-14 mcg/dL | Within one month (i.e. 20 working days) of BLL confirmation | <ul style="list-style-type: none"> ✓ If initial test result is a capillary (fingerstick) specimen, confirm with a venous specimen within timeframe specified in Table 1. ✓ Risk reduction education and nutritional counseling ✓ Monitoring of venous blood lead levels in accordance with the follow-up testing schedule in Table 2. |
| 15-19 mcg/dL | Within two weeks (i.e. 10 working days) of BLL confirmation | <p>All actions for BLLs 10-14 mcg/dL, plus</p> <ul style="list-style-type: none"> ✓ Initiation of environmental investigation by Local Health Department (LHD) or District Office (DO) within 10 working days. ✓ Communication among LHD/DO and health care provider to monitor progress and assure dwelling is lead-safe. ✓ Detailed lead exposure assessment ✓ Nutritional assessment including iron status¹ ✓ Developmental screening (see Appendix F) |
| 20-44 mcg/dL | Within one week (i.e. 5 working days) of BLL confirmation | <p>All actions for BLLs 15-19 mcg/dL, plus</p> <ul style="list-style-type: none"> ✓ Initiation of environmental investigation by LHD or DO within 5 working days. |
| 45-69 mcg/dL | Within 48 hours of BLL confirmation | <p>All actions for BLLs 20-44 mcg/dL, plus:</p> <ul style="list-style-type: none"> ✓ Initiation of environmental investigation by LHD or DO within 48 hours of EBLL confirmation. ✓ Initiation of medical treatment (chelation). ✓ Communication with health care provider and family to assure treatment is planned. Provide contact information and facilitate consultation with the Regional Lead Resource Center. ✓ If admitted to the hospital for chelation, hospital discharge must not occur until a lead-safe environment is located for the child. If the child is not hospitalized, a lead-safe environment is required during chelation therapy. ✓ Communication with the health care provider and Regional Lead Resource Center to assure appropriate follow-up. ✓ Post-chelation follow up including blood lead level monitoring in accordance with discharge instructions (usually within 7-21 days after treatment). |
| ≥ 70 mcg/dL | Within 24 hours of BLL confirmation | <p>All actions for BLLs 45-69 mcg/dL, plus:</p> <ul style="list-style-type: none"> ✓ Immediate hospitalization for inpatient chelation treatment. ✓ Initiation of environmental investigation by LHD or DO within 24 of blood lead confirmation. |

¹ An iron status evaluation may include a hemoglobin and hematocrit and one or more of the following, mean corpuscular volume (MCV), combined red cell distribution width (RDW); ferritin; transferrin saturation or reticulocyte hemoglobin content.

C. Discharge from Follow-Up Services Criteria

LHD staff work with the child's HCP and parent(s) or guardian(s) to assure that all required follow-up activities have been completed consistent with the child's BLL. Certain circumstances (described below) may occur which necessitate the discharge of the child from active case follow-up by the LHD. In all such instances, the LHD is required to provide written notification to the child's HCP, parent(s) or guardian(s) and other agencies involved in the care of the child. The LHD should also discuss the need for appropriate long-term developmental follow-up with the HCP and the child's parent(s) or guardian(s). Documentation of discharge from follow-up services needs to be recorded in the child's record and LeadWeb or other currently-approved local databases.

1. Medical Discharge

To be eligible for medical discharge from follow-up services, a child with a previous confirmed EBLL must have at least two consecutive blood lead levels (either venous or capillary) < 15 mcg/dL taken at least six months apart **or** at least one BLL < 10 mcg/dL, **and** all required follow-up activities, including environmental management, must have been completed consistent with the child's BLL, as outlined in **Tables 2** and **3** above.

Discharge of a child from follow up services should be based upon joint nursing and environmental decision making. The decision for discharge should be based upon the child's BLL and whether there are any outstanding environmental violations that warrant continued follow up of the child. If the child is no longer spending time in an environment where hazards were previously cited and the child's BLL meets the discharge criteria, a decision to close the case from follow up services can be made. A letter should be sent to the child's health care provider and to the parents(s) or guardians(s) that all follow-up services have been completed. A copy of this letter should be included in the child's paper record. The LHD should change the LeadWeb child status to Medical Discharge. A child less than six years of age discharged from follow-up services should continue to receive routine lead testing at required ages, i.e. testing of all children at or around ages one and two years, and annual risk assessment, with blood lead testing for children identified at risk for lead exposure, for children up to age six years.

2. Refusal of service

A child may be discharged if the parent(s) or guardian(s) refuses services offered by the LHD after at least three attempts have been made to educate the family about these services, and the health and developmental risks associated with an EBLL. At least three documented attempts by phone or letter to contact the parent(s) or guardian(s) must have failed to consider discharge on this basis. A certified return receipt letter must be included as at least one of the attempts. Documentation of these attempts needs to be included in the child's record. Contact with the child's HCP to discuss the parent refusal of services must be completed prior to discharge and documented in the child's record. A letter should be sent to the child's HCP to notify them of the parent(s) or guardian(s) refusal of services. A copy of this letter should be included in the child's record. For a child with an EBLL ≥ 15 mcg/dL, the LHD should consider contacting Child Protective Services (CPS) prior to any consideration of discharging the case. The LHD should change the LeadWeb child case status to Refusal of Service.

3. Lost to Follow-up

In certain situations, the LHD may be unable to contact a family, and so a child may be lost to follow-up. This may occur for a variety of reasons, and may be considered if a child has missed two consecutive appointments for follow-up testing or home visits. At least three documented attempts by phone or letter to contact the parent(s) or guardian(s) must have failed to consider discharge on this basis. A certified return receipt letter is recommended as one of the attempts. The LHD needs to contact the child's HCP office to see if a new address or phone information for the family is available. This contact must be completed prior to discharge. Documentation of all attempts needs to be included in the child's record. The LHD should change the LeadWeb child case status to Lost to Follow-up.

4. Expired

If a child has died, the case should be closed to avoid follow-up reminder letters being generated and sent to the family. The LHD should change the child case status in LeadWeb to Expired.

5. Relocated Out of State

If a child with an EBLL moves to another state and the LHD is aware of this move, the LHD should contact the lead program at the state health department in the state where the child has moved. The referral to the state representative should be documented in the child's record. State LPPPs are available on the CDC web site:

<http://www.cdc.gov/nceh/lead/grants/contacts/CLPPP%20Map.htm>. The LHD should change the child case status in LeadWeb to Relocated Out of State.

6. Transfer to Another County

Formal transfer of the case to a new LHD is required when the LHD is aware that a child has relocated to another county within New York State. A phone call to the new county should be made to make them aware of the transfer. The transferring county should facilitate exchange of relevant information, such as change of address. The recipient county needs to confirm the new information is updated in LeadWeb. The transfer should be completed in LeadWeb on the Child Information page by selecting Transfer Child to Another County. There is no need to select a child discharge status as it will be handled automatically. This will generate an automatic e-mail alerting the new LHD of the transfer. Completion of the transfer discharges the child from the transferring LHD's responsibilities; the child may require active follow-up services by the recipient county. For those LHDs who do not currently use LeadWeb (Monroe and New York City), transferring LHDs will need to share the child's information via a secure fax or other confidential method.

D. Data Management

All laboratories that conduct blood lead testing for residents of New York State are required to submit the results to the NYSDOH. The vast majority of laboratories are required to submit results electronically through the Electronic Clinical Laboratory Reporting System (ECLRS). Private Physician Office Laboratories (POLs) that conduct lead testing for their patients in their offices (e.g., using CLIA-waived portable blood lead analyzers) currently submit lead test results to the NYSDOH either through ECLRS or by paper reports that are faxed to the NYSDOH and to the appropriate LHD. LHDs are then responsible to manually enter paper results into LeadWeb on a regular basis. (Note: On May 6, 2009, changes to regulations Part 67-1 to mandate reporting of all BLL results by POLs were adopted and published in the State Register and will be effective on June 20, 2009. On April 8, 2009, Public Health Law was amended to require POLs that conduct blood lead testing on children who reside outside of New York City to report the results of such testing through the New York State Immunization Information System [NYSIIS].) On April 8, 2009, the Governor's 2009-2010 budget bill authorized changes to Public Health Law 1370 and 2168 to collect, store and access any authorized lead data in the Department's NYSIIS. The Department is developing a process which will be available in the near future that will allow POLs to submit reports for blood lead tests on children less than eighteen years of age electronically through the New York State Immunization Information System (NYSIIS).

Electronic results of blood lead tests are transmitted via ECLRS to LeadWeb nightly for download by each LHD on a daily basis. LHDs are responsible for performing a pre-screen of all records in LeadWeb daily, and a match of new lead test results with existing LeadWeb records at least weekly, to assure timely and appropriate follow up of children with EBLLs, and to ensure that all blood lead tests are entered into LeadWeb or another currently approved local data system for state and local data surveillance. Performing a daily match of those children with EBLLs will help to avoid a delay in appropriate and timely interventions.

LHDs are expected to use LeadWeb, or another currently approved local data system, to manage and track lead testing and follow-up data and activities. Reports can be generated from this system and may be utilized to identify children due for second lead screening tests, to track

confirmatory and follow-up testing and other follow-up services for children with EBLs, and to identify opportunities for internal quality assurance and program planning. Additional reporting functions are currently under development. Utilization of the state's web based LeadWeb system provides a real time database of blood lead tests and follow-up activities.

E. Lead Screening/Sliding Fee Scale

HCPs may refer children to local health departments for screening if the child's health insurance does not cover the cost of the lead tests, or if the children have no health insurance. The LHD should provide or arrange for blood lead tests, if needed.

LHDs are expected to have sliding fee scales for blood lead testing for those families with income above 200% of the federal poverty level. The maximum fee charged to families should only cover the LHD cost of laboratory collection fees and reporting of results. Those families with incomes below 200% of the federal poverty level should not be charged for blood lead testing.

If a child has no health insurance, LHD staff should refer the child and parent or guardian to the appropriate local resource to discuss subsidized health insurance options for children and families in NYS. The referral for health insurance should be documented in the child's record.

F. Confidentiality

Public Health Law 1370-a(2)(c) is the governing statute regulating confidentiality of information contained within the statewide childhood lead registry (LeadWeb). Information contained within the childhood lead registry must be maintained as confidential in accordance with this law. Information may be disclosed only for 1) medical treatment purposes or for 2) disclosure of non-identifying epidemiological data.

Other confidentiality requirements such as the Health Insurance Portability and Accountability Act (HIPAA) and the Freedom of Information Law (FOIL) may also govern the actions of LHDs regarding childhood lead information. However, the most restrictive statute with regard to confidentiality would apply. Specifically, even if another law would seem to

permit disclosing information from the childhood lead registry, the information from the lead registry can not be disclosed unless it also meets the PHL requirements stated above.

If the same information contained in the childhood lead registry is found in other documents maintained by the LHD, LHDs should confer with their own attorneys to determine what confidentiality requirements may apply for release of this information.

HIPAA permits covered entities, such as health care providers, to disclose protected health information, without authorization, to public health authorities who are legally authorized to receive such reports for the purpose of preventing or controlling disease, injury, or disability. This would include, for example, the reporting of a disease or injury, such as childhood lead poisoning; reporting vital events, such as births or deaths; and conducting public health surveillance, investigations, or interventions.

G. Policies and Procedures

Local Health Department Lead Poisoning Prevention Programs (LPPP) must maintain manuals that include policies and procedures for the case follow-up activities of the lead program. Manuals must be updated when any changes are made to policies, procedures, and forms, with reviews of manuals done annually. Manuals must be available for review by NYSDOH during monitoring site visits, or upon request.

Manuals must include:

- A written description of follow-up blood lead testing schedules and activities: confirmatory and follow-up blood lead testing schedules, educational mailings, and components of home visits, if applicable.
- Record documentation (include samples of forms developed or used by the LHD) with the most recent revision date on the forms.
- Methods of communication and follow-up with parents and guardians (reminder letters, telephone calls and home visits).
- Methods of communication with LHD or NYSDOH DO environmental health staff to discuss specific cases and when environmental referrals have been made.

- Methods of communication with HCPs on required follow-up activities if not provided by the LHD.
- Procedure for assisting families with temporary relocations, if necessary.
- If applicable, procedure for training new LHD staff on capillary specimen collection techniques. LHDs with experience and expertise in performing capillary sampling for lead screening may also choose to provide training in this technique to staff in HCP offices; if this is done the training protocol should be included in the LHD manual.
- Case discharge criteria.
- Quality Assurance and Quality Improvement activities (include case review, chart reviews, and actions for any deficiencies noted).
- LeadWeb and other comparable data management activities (pre-screening and matching, case matching, case management, environmental referrals).

4. Modified Protocol for Follow-up of Children Age Six to Eighteen Years with Elevated Blood Lead Levels

While lead poisoning prevention efforts primarily target children under age six years, who are most vulnerable to lead poisoning with elevated lead levels that typically peak in early childhood, adverse effects are associated with exposure to lead at any age.¹ Elevated blood lead levels (EBLLs) in early childhood (i.e., measurements of average or peak blood lead levels) have a continuing negative association with measures of cognitive impairment later in childhood.² Moreover, a recent scientific study suggests that blood lead levels (BLLs) measured closest to the time of neurodevelopmental testing (i.e. concurrent BLLs) have the strongest association with measures of neurodevelopmental impairment, even when conducted for children age six years and older.²

Although neither universal nor routine risk-assessment based blood lead testing is required or recommended for children age six years and older, HCPs may choose to test children of any age for blood lead. Whenever new cases of EBLLs are identified among children of any age (birth to 18 years), HCPs and local health departments (LHDs) must provide and coordinate follow-up services in accordance with New York State Public Health Law and regulations and current medical standards and public health guidelines. In addition, children who are initially identified at younger ages with EBLLs that persist beyond the age of six years must continue to be followed until medical or other established criteria for discharge from follow-up services are met (see section 3-C of this manual).

Requirements for follow-up services for children with EBLLs are outlined in NYCRR, Title X, Section 67-1.2(a) and in section 3-A and 3-B of this manual. (Note: On May 6, 2009,

¹Centers for Disease Control and Prevention. (2007). Interpreting and managing blood lead levels < 10 µg/dL in children and reducing childhood exposures to lead: recommendations of CDC's Advisory Committee on Childhood Lead Poisoning Prevention.

²Chen A., Dietrich K.N, Radcliffe J. & Rogan, W.J. (2005). IQ and blood lead from 2 to 7 years of age: are the effects in older children the residual of high blood concentrations in 2-year olds? *Environmental Health Perspectives*, 113(5): 597-601.

revisions to New York Code of Rules and Regulations were adopted clarifying that follow up services are required for all children with EBLLs up to age 18 years.)

In general, children over age six years with EBLLs require the same components of follow-up services as younger children, including follow-up blood lead testing, risk reduction education, nutritional counseling, developmental screening, environmental management, and medical treatment, depending on blood lead levels. However, children over age six years may frequently have different exposure sources and different needs for follow-up services that are dependent on case-specific assessments.

In order to fulfill responsibilities for coordination of follow-up services for children age six to eighteen years with EBLLs, LHDs may:

- 1) follow the same processes and protocols that they utilize for children under age six years, *or*
- 2) choose to utilize a modified approach to tailor follow-up services to the specific and unique needs of individual older children. The protocol in Section D below outlines a modified approach that LHDs may use to tailor the coordination of follow-up services for children newly identified with EBLLs between the ages of six and 18 years.

A. Confirming Elevated Capillary Lead Tests

The policy for confirmation of elevated capillary lead tests for children age six to eighteen years is consistent with the policy for children under age six years. Specimens obtained via venous blood lead testing are the preferred specimens for blood lead analysis and should be used for lead measurement whenever practicable. Capillary testing is an acceptable method for initial blood lead screening if appropriate methods are followed to minimize risk of contamination (see Appendix H). Venous blood samples must be used to confirm all elevated capillary blood lead level (BLL) results, i.e. if a BLL result ≥ 10 mcg/dL is obtained on a capillary specimen, the child must be retested using a venous blood sample as a confirmatory (diagnostic) test. (Note: On May 6, 2009, the NYS Code of Rule and Regulations Part 67-1 was changed requiring health care providers to confirm capillary blood lead results equal to or greater than 10 mcg/dL in place of the current requirement of 15 mcg/dL or greater. This change

became effective June 20, 2009.) Refer to section 3-A for the schedule of confirmatory venous samples when an initial capillary sample result is elevated.

B. Follow-up Actions Based on Confirmed Blood Lead Levels for Children Age Six to Eighteen Years with EBLLs

LHDs must coordinate or provide activities to assure appropriate follow-up services for all children age six to 18 years newly identified with EBLLs ≥ 10 mcg/dL. Depending on the initial BLL, follow-up blood lead testing, risk reduction education, nutritional counseling, developmental screening, and medical treatment must be assured, in accordance with NYCRR Title X, Section 67-1.2(6)(7)(9)(10) and Table 2 and 3 of this manual (see section 3-B). LHD programs do not have to directly provide all follow-up services, but are responsible for coordinating and documenting that required interventions have occurred.³ This can be accomplished either by receiving documentation from HCPs to confirm that appropriate follow-up was done, by directly providing the necessary follow-up services, or by a combination of the two. LHDs may follow the same general processes and protocols utilized to coordinate follow-up services for children under age six years, or may choose to utilize a modified approach outlined in Section C below to further tailor follow-up services to the specific and unique needs of individual older children.

C. LHD Modified Protocol for Coordination of Follow-up Services for Children Age Six to Eighteen Years with EBLLs

As noted above, LHDs may choose to utilize a modified approach to tailor follow-up services to the specific and unique needs of individual children ages six to 18 years with EBLLs, or they may follow the same processes and protocols that they utilize to coordinate follow-up services for children under age six years. If a modified approach is selected, LHDs may choose to implement this approach for all children age six to 18 years with EBLLs, or for only a subset of children age six to 18 years with EBLLs above a specific threshold (e.g., ≥ 15 mcg/dL).

³ “Follow-up” means actions by local health units and health care providers which, depending on the blood lead level and exposure history of the child, shall include as appropriate: risk reduction education, follow-up testing, confirmatory testing, diagnostic evaluation, medical management, environmental management and case management, in accordance with generally accepted medical standards and public health guidelines.

Whatever approach is adopted, LHDs should incorporate relevant policies and procedures in their lead poisoning prevention program and environmental health policy and procedure manuals.

If a modified approach is utilized, follow-up services are tailored to the individualized needs of children based on information gathered from HCPs and parents and guardians using structured interview tools attached and described below. While older children require all the basic components of follow-up services as younger children (including follow-up blood lead testing, risk reduction education, nutritional counseling, developmental screening, environmental management, and medical treatment, depending on blood lead levels), the scope and content of those services may be adapted based on the individualized needs and suspected exposure source(s) identified through the interviews.

1.) LHD program staff contact HCPs to assess reason for blood lead test and need for additional follow-up.

In order to collect information to guide tailoring of follow-up services, staff should contact HCPs for children age six to 18 years who are newly identified with confirmed EBLLs to obtain information about the child's history, and to inquire whether the HCP was concerned that the older child had a possible exposure to lead, including any knowledge of specific potential exposure source(s). A structured interview tool has been developed that may be used for this purpose (see Attachment A: *Health Care Provider Interview Tool*).

**Please note that the interview tool has been designed to be conducted by telephone; if LHDs wish to conduct interviews in person, they may do so, using the provided script as an interview guide. It is not recommended that the interview form be mailed to HCPs.*

2.) LHD program staff contact parents and caregivers to obtain additional information.

In order to collect additional information to guide tailoring of follow-up services, LHDs should also contact parents and guardians of children age six to 18 years who are newly identified with confirmed EBLLs. Staff should inquire about the reason for the lead test, i.e. concern that the child had a possible exposure to lead, including any specific suspected source(s) of potential exposure, previous lead exposure and treatment history, household exposures and family history and environment. A structured interview tool has been developed that may be used for this purpose (see Attachment B: *Parent/Caregiver Interview Tool*).

**Please note that the interview tool has been designed to be conducted by telephone; if LHDs wish to conduct interviews in person, they may do so, using the provided script as an interview guide. It is not recommended that the interview form be mailed to parents and caregivers.*

3.) LHD program staff coordinates other follow-up services as needed, depending on BLL.

For all children age six up to age 18 with EBLs, lead program staff are responsible to coordinate appropriate follow-up services. Depending on the BLL, follow-up blood lead testing, risk reduction education, nutritional counseling, developmental screening, and medical treatment must be assured, in accordance with NYCRR Title X, Sections 67-1.2(6), (7), (9) and (10) and Tables 2 and 3 of this manual (see section 3-B). Timeframes outlined in these tables also apply to follow-up services for children age six to age 18 years. LHD lead program staff does not have to directly provide all follow-up services, but are responsible for coordinating and documenting that required interventions have occurred. For children age six to 18 years, the follow-up services may be tailored to individuals based on the results of assessment(s) conducted in steps 1 and 2 above.

If an adolescent with an EBL is pregnant, she should be referred to a prenatal care provider. The prenatal care provider may be referred to the Regional Lead Resource Center if additional management advice is needed. Consider additional referrals to promote positive pregnancy outcomes, including local Medicaid services, WIC, and other community services. Document the referrals in the adolescent's record and assure the appropriate blood lead testing for the baby following delivery.

4.) LHD programs review results of initial interview(s) and make referrals to LHDs or NYSDOH DOs for all children ages 6 to 18 years with EBLs \geq 15 mcg/dL.

LHDs should refer all children with BLLs \geq 15 mcg/dL to the appropriate LHD or NYSDOH DOs for environmental management. Results of any assessment(s) conducted in steps 2 and 3 above should be shared and discussed with NYSDOH DOs to assist them in tailoring environmental follow-up services. NYSDOH DOs will determine the need for environmental management services based on the results of assessments and through consultation with other LHD programs, HCPs, parents and caregivers, and occupational health professionals, as

appropriate (Note: On May 6, 2009, NYS Code of Rule and Regulations was revised to lower the blood lead level requiring environmental intervention from 20 to 15 mcg/dL. This change is effective on June 20, 2009).

When a referral for environmental management is issued, the LHD and NYSDOH DO should use the risk questionnaire (DOH 1333 Environmental Lead Investigation Report or equivalent) to identify any significant sources of lead exposure relevant to the EBLL and to determine the need for further environmental investigation. The risk questionnaire may be conducted by telephone, or on site. As noted, other pertinent information collected from HCPs and parent and guardian interviews by the referring LHD program should be incorporated in the assessment and investigation. The investigation of environmental sources and alternate addresses should be based on the information obtained during this process, and should take into account all known factors, such as children with developmental delay or other developmental factors, the presence of pica, age, hobbies, occupational sources, sibling case histories, and the reason for the initial blood lead test. LHDs and NYSDOH DOs should conduct additional assessment and provide follow-up environmental services as needed. The rationale for determining the scope of the environmental investigation should be documented in the comments section of DOH 1333 or equivalent and shared with LHD lead programs coordinating or providing follow-up services. Relevant sections of DOH 1333 or the equivalent should be completed for each address investigated. Educational information should be provided to the parents and caregivers about reducing or eliminating the child's lead exposure.

If likely exposure sources are identified, it may not be necessary to perform extensive environmental investigations at all locations where the patient spends significant amounts of time. However, if the situation indicates that deteriorated paint is a potential exposure source, and deteriorated paint source is not found in the primary residence, then investigation of secondary addresses may be indicated. If a child is at least 16 years of age and under 18 years of age, or if the assessment otherwise indicates potential occupational lead exposures, the LHD and NYSDOH DO should coordinate their activities with the NYSDOH Bureau of Occupational Health (NYSDOH BOH) as described in step (5) below.

5.) Coordination with NYSDOH Bureau of Occupational Health (NYSDOH BOH)

The Bureau of Occupational Health routinely contacts parents and caregivers of adolescents age 16 and 17 with BLLs \geq 10 mcg/dL through telephone interviews. When an adolescent 16 or 17 years of age is identified with an elevated BLL, the LHD should first consult with the NYSDOH BOH (518-402-7900) to discuss results of the BOH assessment to avoid duplication of efforts and to determine the need for additional follow up. The LHD should work collaboratively with BOH to identify, reduce or eliminate exposure sources as part of their overall case coordination responsibilities.

For any child (regardless of age) identified through the lead program or environmental assessments as having potential work-related lead exposure, the LHD or NYSDOH DO can consult with the BOH and the occupational health clinics located throughout the state to identify methods to identify, reduce or eliminate exposure sources (see Appendix G for contact information).

D. Discharge from follow-up services

Criteria for discharge from follow-up services for children age six years up to age 18 years is the same as criteria defined for children generally. Please refer to Section 3-C of this manual.

Attachments

| | |
|--|------|
| A. Health Care Provider Interview Tool | 4-9 |
| B. Parent/Caregiver | 4-11 |
| C. Environmental Lead Investigation Report | 4-17 |

**Follow-up of Children age Six to Eighteen Years with Elevated Blood Lead Levels:
Health Care Provider Interview Tool**

| | |
|------------------------|-----------------------------|
| Child Name: _____ | DOB: _____ |
| Child Address: _____ | Phone: _____ |
| _____ | Interview Date: _____ |
| Parent/Guardian: _____ | Health Care Provider: _____ |

***Suggested introduction:** My name is _____. I'm calling from the _____ County Health Department concerning a lead test result that was recently ordered for (patient name) by Dr. _____, on (date) _____. I would like to discuss with you whether the lead test was done because you had concerns that this child has possible lead exposure. I would also like to discuss whether you have scheduled follow-up appointments for this patient as a result of his/her lead level. Local health departments work with health care providers and families to make sure those children with EBLLs receive all necessary follow-up services as required by NYS Public Health Law and regulations. All information that is collected with this interview will remain confidential. Those having access to the information may include, the county health department, NYS Department of Health, and possibly a pediatric specialist who specializes in lead at one of the NYS DOH Lead Resource Centers.*

LEAD TEST

1. Lead test result _____ mcg/dL Date of test _____

Yes No

2. *Did you have any of the following concerns that resulted in your ordering the lead _____ test for this child?*

If yes, please ask for the reason and circle one or more of the response(s):

- A. Pica
- B. Developmental delay
- C. Learning difficulties
- D. Behavior problems
- E. Recent immigrant/refugee

- F. Occupational exposure
- G. Target shooting/hunting
- H. Casting fishing sinkers, bullets or figurines
- I. Use of traditional, folk or Ayurvedic medicines
- J. Use of imported food, pottery or cosmetics
- K. Stained glass work
- L. Older home renovation
- M. Pre-employment physical
- N. Pregnancy
- O. No record of a previous test
- P. Follow-up on a previously elevated lead test
- Q. Other (Describe: _____)

Yes No

3. Are you aware of a suspect exposure source to explain this child's elevated blood lead level? If yes, please describe. _____
4. Is there any other past medical history that may be relevant in this case? Please describe: _____
5. Have any referrals been made to address this elevated blood lead level?
If yes, what persons/agencies are involved? _____
6. Have there been arrangements made for siblings or other children that frequent the home if home is the relevant exposure source) to have lead testing?
7. Would you like assistance from the LHD or Regional Lead Resource Center in managing this case?

**Follow-up of Children age Six to Eighteen Years with Elevated Blood Lead Levels:
Parent/Caregiver Interview (6-18 year olds)**

| | |
|------------------------|-----------------------------|
| Child Name: _____ | DOB: _____ |
| Child Address: _____ | Phone: _____ |
| _____ | Interview Date: _____ |
| Parent/Guardian: _____ | Health Care Provider: _____ |

***Suggested introduction:** My name is _____. I'm calling from the _____ County Health Department about a lead test result for your son/daughter, which was recently ordered by his/her doctor. Local health departments work with health care providers and families to make sure those children with elevated blood lead levels receive all necessary follow-up services. I have some questions I would like to ask you about this lead test, how your child may have come into contact with lead and what can be done to possibly reduce that exposure. The interview lasts about 15-20 minutes, and all information that is collected with this interview will remain confidential. Those having access to the information may include the county health department, NYS Department of Health, your son/daughter's primary care provider and possibly a pediatric doctor who specializes in lead at one of the NYS DOH lead resource centers.*

Ask parent/caregiver if they have time and agree to answer the questions.

- Parent/caregiver agrees to answer questions: Yes _____ No _____
- Parent/caregiver understands introduction given and agree that information from interview can be shared with those listed above: Yes _____ No _____

LEAD TEST

1. Our records indicate that your child had a blood test of ____ mcg/dL for lead on _____
(Date of test)

Were you notified of the result?

- | | |
|-------------------------|-----------|
| 1 Yes - Told level okay | 8 Unknown |
| 2 Yes - Told level high | 9 Refused |
| 3 No | |

2. Do you know why your child's doctor ordered the test? Yes ____ No ____

If yes, please circle one or more of the responses:

A. Pica (eating things other than food such as clay, soil, plaster or paint chips)

B. Developmental delay

C. Learning difficulties

E. Behavior problems

F. Occupational exposure

G. Target shooting/hunting

H. Casting fishing sinkers, bullets or

I. Use of traditional, folk or Ayurvedic medicines

J. Use of imported food, pottery or cosmetics.

K. Stained glass work

L. Older home renovation

M. Pre-employment physical

N. Pregnancy

O. No record of a previous test

P. Follow-up on a previously elevated lead test Lead Test Result ____

Q. Other (Describe: _____)

3. Do you have another blood lead test scheduled?

1 Yes

8 Unknown

2 No

9 Refused

If yes, when is the test scheduled? ____ / ____ / ____

4. Do you have any idea where your child may have come into contact with lead?

1 Yes

8 Unknown

2 No

9 Refused

If yes, please describe: _____

5. Has your child had a lead test in the past?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

If yes, do you remember how high the lead level was? _____

6. Has your child ever been given medication to lower their blood lead level?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

If yes, go to # 7

If no, skip to # 9

7. How old was your child when the medicine was given to lower his/her blood lead level?

- _____ years _____ months
- 8 Unknown
- 9 Refused

8. Was your child ever treated in the hospital for a high lead level?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

If yes, please ask questions: _____

9. What type of house do you live in?

- 1 Single family, townhouse, duplex, or 2-family
- 2 Mobile or modular home
- 3 Apartment or condominium
- 4 Other – please describe: _____
- 9 Refused

10. Was your house/apartment built before 1978?

- | | |
|-------|-----------|
| 1 Yes | 8 Unknown |
| 2 No | 9 Refused |

11. Has there been any renovation, painting or remodeling in the last year?

- | | |
|-------|-----------|
| 1 Yes | 8 Unknown |
| 2 No | 9 Refused |

HOBBIES

12. In the past year, has your child or anyone within your household, participated in any of the following activities?

| | Yes | No |
|--|-------|-------|
| A. Target shooting/hunting | _____ | _____ |
| B. Stained glass work | _____ | _____ |
| C. Painting with lead paints | _____ | _____ |
| D. Pottery making with lead glaze | _____ | _____ |
| E. Jewelry making with lead solder | _____ | _____ |
| F. Print making and other fine arts | _____ | _____ |
| G. Casting fishing sinkers, bullets or figurines | _____ | _____ |
| H. Electronics with lead soldering | _____ | _____ |
| I. Older home renovation | _____ | _____ |
| J. Older furniture refinishing | _____ | _____ |
| K. Automotive repair | _____ | _____ |
| L. Other: | _____ | _____ |

If other, please specify: _____

DIET, CERAMICS AND TRADITIONAL MEDICINES

13. Do you use any spices and/or herbs from outside the United States?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

If yes: What is the name of the spice/herb? _____
Where did it come from? _____

14. Do you use any traditional, folk or Ayurvedic remedies and/or medicines?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

If yes: What is the name of the supplement? Where is it obtained? Reason for use?

15. Do you use any glazed ceramics and/or pottery that were imported from outside the United States?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

If yes: What was it? _____
Where did it come from? _____

FAMILY HISTORY

16 Are there any children younger than age seven that have lived with or frequently visited you in the last year?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

If no, skip to # 17

17. If yes, have these children been tested for lead?

- 1 Yes
- 2 No
- 8 Unknown
- 9 Refused

Please describe if needed: _____

18. Is anyone in the house pregnant, nursing or trying to conceive?

1 Yes

8 Unknown

2 No

9 Refused

19. Have you/your family recently left another country to come live in the U.S.?

1 Yes

8 Unknown

2 No

9 Refused

If yes, what is your country of origin? _____

Environmental Lead Investigation Report

| | | |
|---|--|---|
| Copy of referral received _____ Copy of report sent to <input type="checkbox"/> Case Manager _____ <input type="checkbox"/> Property Owner _____ <input type="checkbox"/> Physicians _____ | Initial Inspection Level <input type="checkbox"/> Date _____/_____/_____ m d y | Final Control Level <input type="checkbox"/> Date _____/_____/_____ m d y |
|---|--|---|

| |
|-----------------------------|
| Case # (if any) _____ |
| Zip Code _____ Census _____ |

Section A. Identifying Information

| | | | |
|---|-------------|--------------|--------------|
| Dwelling Unit Address | | | |
| Street Number and Street _____ | | | Apt. # _____ |
| City _____ | | State _____ | Zip _____ |
| Child's Name | | | |
| Last _____ | First _____ | Middle _____ | |
| Occupant's Name | | | Phone _____ |
| Last _____ | | First _____ | |
| Occupant's Relationship to Child _____ | | | |
| Owner's Name | | | Phone _____ |
| Last _____ | | First _____ | |
| Owner's Address | | | County _____ |
| Street _____ | | Apt. # _____ | |
| City _____ | | State _____ | Zip _____ |

Section B. Sources of Exposure

| | Yes | No | N/A |
|-----------------------|--------------------------|--------------------------|--------------------------|
| Interior Paint | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Exterior Paint | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Soil | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dust | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Water | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Hobbies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Home Medicines | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cosmetics | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Pottery | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Occupational | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other (specify) _____ | | | |

Section C. The Dwelling Unit

1. Is there any renovation or remodeling occurring in the building? Yes No

When was the building last renovated? ____/____/____

By whom? Owner Tenant Other

Describe the type of renovation performed: _____

2. Is the dwelling in a single or multifamily building? _____

Number of stories

Number of dwelling units

Number of floors in dwelling unit

Number of rooms in dwelling unit

3. Does the household potable water system contain lead pipes, brass fittings, lead solder, etc.? Yes No

Public water supply or private well?

Water sample taken? Yes No

4. How often do occupants clean floors and woodwork?

Method _____

The following are Yes or No questions:

Yes No

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |

1. Are deteriorated paint films or defective plaster present in indoor areas accessible to the child?

2. Are deteriorated paint films present in outdoor areas accessible to the child?

3. Are there any teeth marks on the windowsills, porch railing, furniture, etc.

4. Are there any other housing deficiencies? If yes, please specify:

| Problem | Action Taken |
|---------|--------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

5. Are there any lead related industries near the dwelling?

If yes, specify type and location: _____

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

6. Are there any areas with bare dirt/soil spots in the yard where the child plays?

Section D. The Child

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

1. Does the child frequently put into his/her mouth or chew any of the following:

- | | |
|---|--|
| <input type="checkbox"/> Painted surfaces (windowsill, furniture) | <input type="checkbox"/> Putty/glazing from windows |
| <input type="checkbox"/> Peeling or fallen paint chips | <input type="checkbox"/> Soft metal objects (fishing sinkers, pewter, jewelry) |
| <input type="checkbox"/> Printed materials (newspaper, books) | <input type="checkbox"/> Cigarettes, tobacco, matches or ashes |
| <input type="checkbox"/> Toys | <input type="checkbox"/> Cosmetics, talcum powder, specify: _____ |
| <input type="checkbox"/> Fingers/thumb | <input type="checkbox"/> Batteries |
| <input type="checkbox"/> Dust or soil | <input type="checkbox"/> Tools |
| <input type="checkbox"/> Other (describe): _____ | |

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

2. Does anyone in the family have any hobbies that involve lead?

(collecting figurines, casting fishing sinkers or ammunition, ceramics, stained glass, etc.)

Describe: _____

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

3. Does your child play near any lead related industry, landfills, hazardous waste sites?

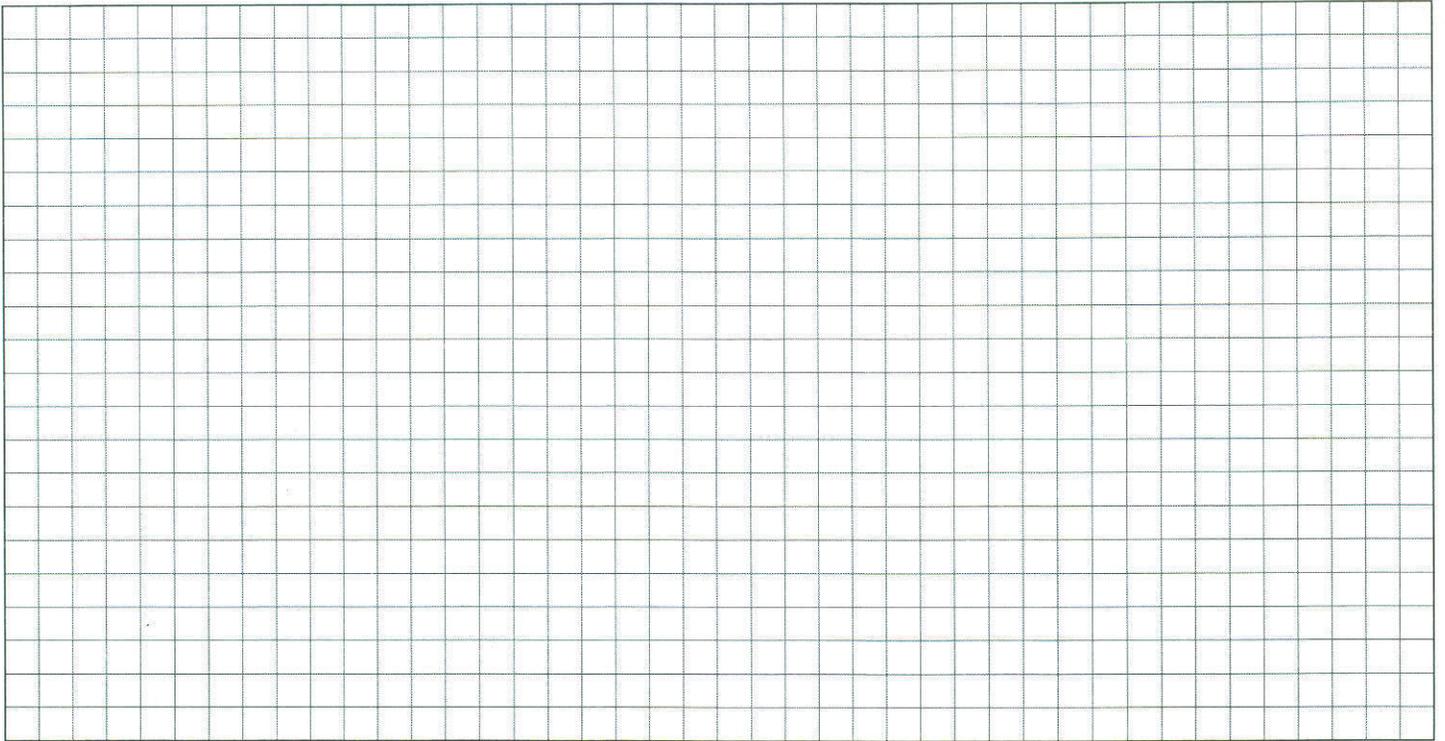
If yes, specify: _____

Section D. The Child, continued

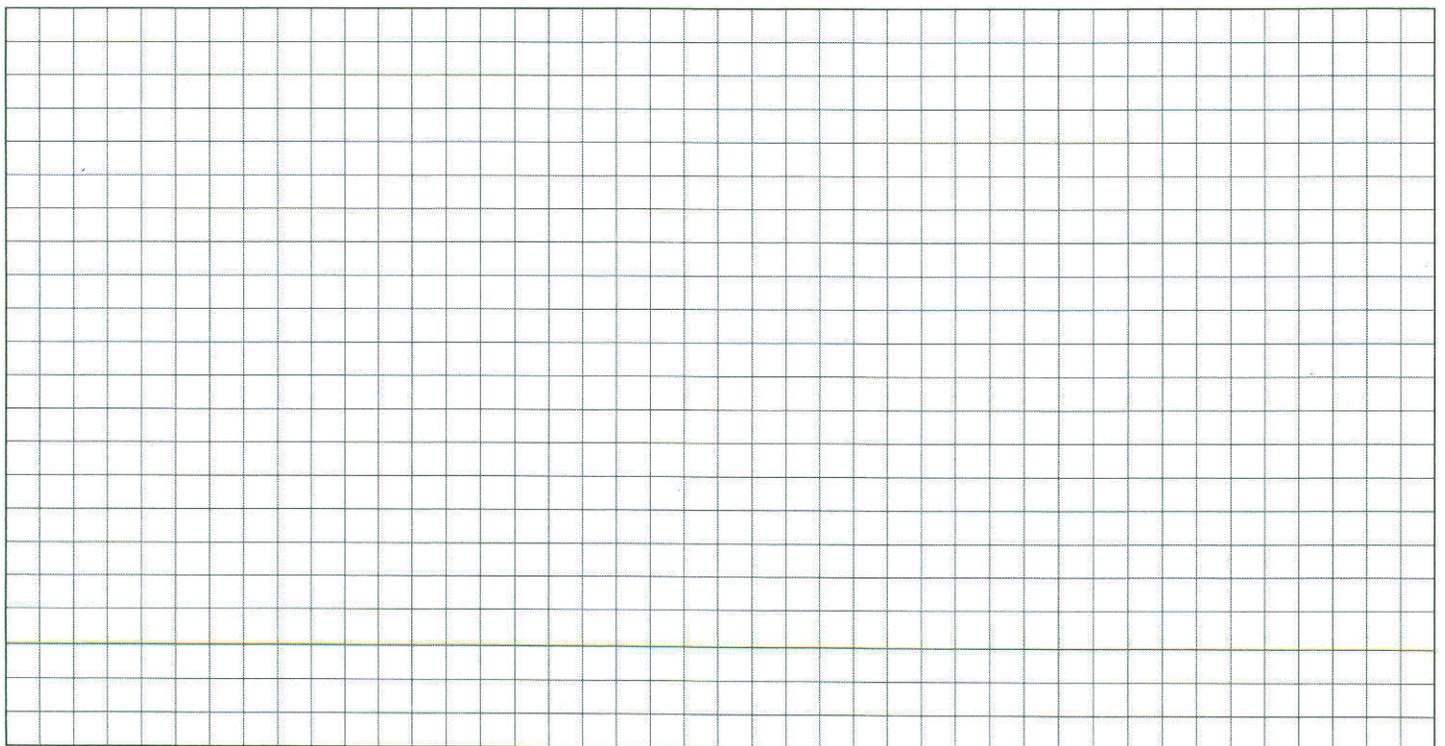
| | Yes | No | |
|---|-------------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Does your family ever use home remedies such as Azarcon, Greta, Paylooh, etc.? Describe: _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Does the child like to sleep or take naps in a particular place? Where? _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. Does the child play hide and seek? If yes, where does the child like to hide? _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. Does the child have a favorite place to play indoors? Where? _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. Does the child have a favorite place to play outdoors? Where? _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. Does the child wash their hands before eating or sleeping? _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. Does the child consume food or beverages prepared, stored or served in suspect ceramic containers? lead soldered cans? If yes, describe: _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11. Has the child lived at these premises less than three months? If yes, list the previous address: Dwelling's address: _____ Street Number and Street _____ Apt. # _____ City _____ State _____ Zip _____ Owner: _____ Phone #: _____ Last Name _____ First Name _____ Street _____ Apt. # _____ City _____ State _____ Zip _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 12. Does the child regularly spend time away from home? If yes, list locations: Name _____ Street _____ Apt. # _____ City _____ State _____ Zip _____ Relationship to child: _____ Phone #: _____ How often? <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Name _____ Street _____ Apt. # _____ City _____ State _____ Zip _____ Relationship to child: _____ Phone #: _____ How often? <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Name _____ Street _____ Apt. # _____ City _____ State _____ Zip _____ Relationship to child: _____ Phone #: _____ How often? <input type="checkbox"/> |
| List any other children at these addresses: | | | |
| Name | Address (street, apartment #) | DOB | |
| Name | Address (street, apartment #) | DOB | |
| Name | Address (street, apartment #) | DOB | |

Section I. Diagram of Unit (Show Sampling Locations on Diagram)

Floor # _____



Floor # _____



5. References

American Academy of Pediatrics. Developmental Surveillance and Screening of Infants and Young Children. *Pediatrics* 2001;108: 192-196.

Bearer, C.F. (1995). Environmental Health Hazards: How children are different from adults *Critical Issues For Children And Youths* 5(2), 11-26.

Centers for Disease Control and Prevention. Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Atlanta, 2002.

Centers for Disease Control and Prevention. Interpreting and Managing Blood Lead Levels < 10 mcg/dL in Children and Reducing Childhood Exposures to Lead: Recommendations from CDC's Advisory Committee on Childhood Lead Poisoning Prevention. Atlanta, 2007.

Centers for Disease Control and Prevention. Lead Poisoning Prevention in Newly Arrived Refugee Children. Atlanta, 2006.

Chen, A., Dietrich K.N., Radcliffe J. & Rogan, W.J. (2005). IQ and blood lead from 2 to 7 years of age: are the effects in older children the residual of high blood concentrations in 2-year olds? *Environmental Health Perspectives*, 113(5); 597-601.

Lidsky, T.I., Schneider, J.S. (2003). Lead neurotoxicity in children: basic mechanisms and clinical correlates. *Brain* 126, 5-19.

6. Abbreviations

| | |
|--------|---|
| BLL | Blood lead level |
| BOH | Bureau of Occupational Health |
| CDC | Centers for Disease Control and Prevention |
| CLIA | Clinical Laboratory Improvement Amendments |
| LPPP | Childhood Lead Poisoning Prevention Program |
| CPS | Child Protective Services |
| DO | District Office |
| EBLL | Elevated blood lead level |
| ECLRS | Electronic Clinical Laboratory Reporting System |
| EH | Environmental Health |
| EP | Erythrocyte protoporphyrin level |
| EPA | Environmental Protection Agency |
| EIP | Early Intervention Program |
| HCP | Health Care Provider |
| HEPA | High Efficiency Particulate Air |
| HIPAA | Health Insurance Portability and Accountability Act |
| LHD | Local Health Department |
| mcg/dL | Micrograms per deciliter |
| NYSDOH | New York State Department of Health |
| PHI | Public Health Information |
| POL | Physician Office Laboratory |
| RLRC | Regional Lead Resource Center |
| WIC | Special Supplemental Nutrition Program for Women, Infants, and Children |

7. Appendices

| | |
|--|------|
| A. Ethnic Spices, Herbs and Cosmetics Containing Lead | 7-2 |
| B. Sources of Lead | 7-4 |
| C. Roles and Responsibilities of the Health Care Providers | 7-5 |
| D. Risk Assessment Questions | 7-7 |
| E. Anticipatory Guidance | 7-8 |
| F. Developmental Screening | 7-11 |
| G: Occupational Health Clinics | 7-13 |
| H. Capillary Blood Sampling Protocol | 7-15 |

Ethnic Spices, Herbs, Cosmetics Containing Lead

| Name | Region/Country | Purpose |
|---|------------------------|--|
| Azarcon Also known as alarcon, coral, luiga, maria luisa, or rueda. | Mexico | Bright orange powder used to treat an upset stomach (empacho), constipation, diarrhea, vomiting, and used on teething babies. Azarcon is 95% lead. |
| Ayurvedic medicine | India, Pakistan, Tibet | A type of complementary and alternative medicine that may include the use of herbs and specialized diets |
| Al Murrah | Saudi Arabia | Colic, stomach ache, diarrhea |
| Anzroot | Middle East | Gastroenteritis |
| Ba-Baw-San | China | Herbal medicine used to treat colic pain or hyperactivity in young children. |
| Bali gali | Asia/India | Stomach ache |
| Bint al zahab | Iran, Saudi Arabia | Rock ground into a powder and mixed with honey and butter given to newborn babies for colic and early passage of meconium after birth. |
| Bokhoor | Kuwait | A traditional practice of burning wood and lead sulphide to produce pleasant fumes to calm infants. |
| Cebagin | Middle East | Teething powder |
| Chuifong tokuwan | Asia | Not known |
| Farouk | Saudi Arabia | Teething powder |
| Ghasard | India | Brown powder used to aid digestion. |
| Greta | Mexico | Yellow powder used to treat empacho (see azarcon); can be obtained through pottery suppliers, as it is also used as a glaze for low-fired ceramics. Greta is 97% lead. |
| Jin Bu Huan | China | An herbal medicine used to relieve pain. |
| Kandu | Asia/India | Stomach ache |
| Kohl | Middle East, India, | A gray or black eye cosmetic |

| | | |
|-------------------------|---------------------------------|--|
| Also known as Al Kohl | Pakistan, some parts of Africa) | applied to the conjunctival margins of the eyes. Can contain up to 83% lead. It is believed to strengthen and protect the eyes against disease. |
| Litargirio | Dominican Republic | Yellow-peach powder used as a deodorant or to treat foot fungus. Also used to treat burns. |
| Lozeena | | An orange powder used to color meat and rice. That contains 7.8-8.9% lead. |
| Pay-loo-ah | Vietnam | Red powder used to cure a rash or fever in children. |
| Po Ying Tan | Vietnam | Herbal medicine used to treat minor ailments in children. |
| Pakistani eye cosmetics | | Eye cosmetics are often applied to the eyes of children. |
| Surma | India | A black fine powder applied to the eyes for medicinal and cosmetic reasons. |
| Tamarind Candy | Mexico | Tamarind candy jam products from Mexico. During the manufacturing process, the candied jam is packaged in stoneware or terra cotta ceramic jars that can leach lead. |

Reference: Centers for Disease Control and Prevention. *Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention.* Atlanta: CDC; 2002.

Sources of Lead

| |
|---|
| <ul style="list-style-type: none"> ▪ Lead paint - lead-based paint found in many homes built before 1978 have lead-based paint. Lead paint that is deteriorating can be a source of lead poisoning for children. ▪ Household dust - dust can become contaminated from deteriorating lead-based paint. ▪ Soil – soil can become contaminated from exterior lead-based paint. ▪ Drinking water – water can become contaminated if plumbing contains lead or lead solder. ▪ Certain occupations and hobbies (see below). |
| <p>Occupations/Industries</p> |
| <p>Ammunition/explosives maker Auto repair/auto body work Battery maker Bridge, tunnel repair Bricklayers Building or repairing ships Cable repair Construction Ceramics worker (pottery, tiles) Firing range worker Leaded glass factory worker Industrial machinery/equipment Jewelry maker or repair Junkyard employee Lead miner Melting metal (smelting) Painter Paint/pigment manufacturing Plumbing Pouring molten metal (foundry work) Radiator repair Remodeling/repainting/renovating houses or buildings built before 1978 Removing paint (sandblasting, scraping, sanding, heat gun or torch) Salvaging metal or batteries Welding, metal workers</p> |
| <p>Hobbies/Miscellaneous</p> |
| <p>Old painted toys and furniture Food and liquids stored in lead crystal or lead-glazed pottery or porcelain. Remodeling, repairing, renovating home Painting/stripping cars, boats, bicycles Soldering Melting lead for fishing sinkers or bullets Making stained glass Firing guns at a shooting range</p> |

Roles and Responsibilities of Health Care Providers

New York State Department of Health Lead Poisoning Prevention Program supports the concept of the “medical home” as defined by the American Academy of Pediatrics Policy Statement, (2002). Within a medical home, the physician is responsible for providing comprehensive, coordinated and accessible medical care for the child and family. For children with elevated blood lead levels (EBLLs), health care providers (HCPs) must communicate and coordinate as appropriate with local health departments (LHDs) to ensure that children with EBLLs receive appropriate follow-up.

NYS Public Health law is consistent with this concept as outlined in the regulations concerning childhood lead poisoning and prevention, Public Health Law, Section 206, Title X of Article 13, Sub-part 67-1, 67-1.2. Under these regulations, health care providers are required to:

- Provide anticipatory guidance on lead poisoning prevention to the parents and guardians of all children less than six years of age.
- Assess all children age six months to six years of age for lead exposure through risk assessment tools based on currently accepted public health guidelines, and screen children found to be at risk with blood lead tests. This should be done at each routine well-child visit or at least annually.
- Obtain blood lead level (BLL) tests on all children at or around one **and** two years of age as required by public health law.
- Provide blood lead test results within 14 business days of the date of analysis to the Local Health Officer in the jurisdiction where the child resides and the Commissioner of Health, if point-of-care testing is performed.
- Explain lead test results and provide documentation of lead screening to parents and guardians.
- Provide or make reasonable efforts for the follow-up testing for all children with EBLLs according to acceptable medical standards and public health guidelines.
- Consider more frequent testing (more than annually) for children whose BLLs are approaching 10 mcg/dL, particularly children under two years of age or those who are at

high risk for lead exposure, as BLLs in the range of 5-9 $\mu\text{g/dL}$ have been associated with adverse health effects in children aged 6 years and younger.

- Provide or make reasonable efforts to ensure the provision of risk reduction education and nutritional counseling to parents and guardians of all children with BLLs ≥ 10 mcg/dL.
- Provide or make reasonable efforts to carry out complete diagnostic evaluations for all children with BLLs ≥ 15 mcg/dL. A complete diagnostic evaluation includes at a minimum: a detailed lead exposure assessment, a nutritional assessment with iron status, and a developmental screening.
- Communicate and coordinate as appropriate with LHDs to ensure that all children with EBLLs receive appropriate follow-up services as described above.

Lead Exposure Risk Assessment Questionnaire for Children

In addition to the required testing of all children for lead with a blood lead test at one year of age and again at age two, assessment of risk for lead exposure should be done at each well-child visit or at least annually for each child six months to six years of age. The questions below serve as a risk assessment tool based on currently accepted public health guidelines. Children found to be at risk for lead exposure should receive a blood lead test whenever such risk is identified.

| Questions | Answer | |
|---|--------|----|
| | Yes | No |
| <p>1. Does your child live in or regularly visit a house/building built before 1978 with peeling or chipping paint, or with recent or ongoing renovation or remodeling? Note: This could include a day care center, preschool, and the home of a babysitter or a relative.</p> | | |
| <p>2. Has your family/child ever lived outside the United States or recently arrived from a foreign country?</p> | | |
| <p>3. Does your child have a brother/sister, housemate/playmate being followed or treated for lead poisoning?</p> | | |
| <p>4. Does your child frequently put things in his/her mouth such as toys, jewelry, or keys? Does your child eat non-food items (pica)? Note: This may include toys or jewelry products that have been recalled by the Consumer Products Safety Commission (CPSC) due to unsafe lead levels: www.nyhealth.gov/environmental/lead/recalls</p> | | |
| <p>5. Does your child frequently come in contact with an adult whose job or hobby involves exposure to lead? Note: Jobs include house painting, plumbing, renovation, construction, auto repair, welding, electronics repair, jewelry or pottery making. Hobby examples are making stained glass or pottery, fishing, making or shooting firearms and collecting lead or pewter figurines.</p> | | |
| <p>6. Does your child live near an active lead smelter, battery recycling plant, or another industry likely to release lead, or does your child live near a heavily-traveled road where soil and dust may be contaminated with lead? Note: May need to alert parent/caregiver if such an industry is local.</p> | | |
| <p>7. Does your family use products from other countries such as health remedies, spices, or food, or store or serve food in leaded crystal, pottery or pewter? Note: Lead has been found in traditional medicines such as Ayurvedic medicine, liga, greta, azarcon, litargirio, and in cosmetics such as kohl, surma, and sindoor. Lead exposure risk is higher with old, imported, painted, cracked or chipped china, and in low-fired and terra cotta pottery, often made in Latin America and the Middle East.</p> | | |

If the answer to any of the above questions is YES, then the child is considered to be at risk for lead exposure and should receive a blood lead test.

- Ask any additional questions that may be specific to a particular community (or population) e.g. high risk zip code, refugee child recently arrived in the United States, children with behavioral and/or developmental disabilities, children who receive Medicaid or children entering foster care.
- Ask if any of the above conditions are expected to change in the future (e.g. house remodeling).
- Tailor appropriate anticipatory guidance to the child and family.

Anticipatory Guidance

The following outline gives information that may be included in discussions about lead risk reduction with all families. Affirmative answers to the risk assessment questions may provide the practitioner with additional guidance regarding what information should be stressed as part of the anticipatory guidance portion of the encounter.

Effects of lead poisoning

- Growth and development - may slow a child's physical and intellectual growth; at very high levels may cause mental retardation.
- Behavior - may cause irritability, attention deficit and/or hyperactivity.
- Bone marrow - interferes with red blood cell production.
- Kidney - may cause tubular damage; interferes with vitamin D metabolism.
- Ear - may cause hearing deficits.

Sources and pathways of lead

- Lead-based paint - exists in older housing. Sanding, scraping or burning paint during renovation increases hazards. Deteriorating paint may flake and create dust. Children may chew on painted surfaces or transfer the dust to their mouth after touching these surfaces.
- Soil or dust - weathered and deteriorated lead-based paint may contaminate soil or dust around older houses.
- Drinking water - corrosive water in contact with lead pipes or lead soldered pipes.
- Occupation and hobbies - construction or demolition workers or workers in smelters, foundries, battery factories and other lead-related industries may bring home highly concentrated lead dust on their skin or clothing. Engaging in artwork with stained glass and ceramics, fishing weights or hunting shot may result in lead exposure.
- Airborne lead - may result from industries such as smelters, battery burning, or home repair or renovation.

- Food - acidic food in contact with lead containing pottery, glass or antique pewter can contain elevated levels of lead. Imported foods may come in lead soldered cans. Water used in cooking, food preparation and formula preparation may add to the lead content of food.
- Folk remedies.
- Children who have emigrated from other countries to the United States.
- Consumer products containing lead.

Pathways of lead absorption

- Ingestion - principal route of lead absorption. Small children put things into their mouths, which transfers lead - laden dust from the environment into their bodies.
- Inhalation - another important route of lead exposure. Lead-laden dust may be absorbed through the lungs. Dust may be increased during building renovation. Normal cleaning, vacuuming or sweeping may also increase the availability of lead dust.
- Maternal-fetal transfer - lead crosses the placenta.

Strategies for Reducing Lead Exposure

- Regularly wash children's hands especially before meals and snacks and after outdoor play. Wash children's toys every day.
- Houseclean using wet mopping and damp dusting. Recommend thorough cleaning of floors, windowsills and window wells, kitchen floors and counter tops with a solution containing a heavy-duty household cleaner. Cleaners high in phosphate work particularly well.
- If lead dust is suspected, avoid the use of regular vacuum cleaners that may spread the lead dust. Use specially equipped High Efficiency Particulate Air (HEPA) vacuums to clean-up lead dust. Local health departments have additional information on HEPA vacuums.
- Run water until cold, at least three minutes before using, which can reduce lead content in water.
- Workers in occupations or hobbies involving lead should change their clothes before coming home, if possible. Work clothes should be washed separately from the rest of the

laundry. Construction or demolition workers, or workers in smelters, foundries, battery factories and other lead-related industries may bring home highly concentrated lead dust on their skin or clothing. Hobby examples include making stained glass or pottery, fishing weights, making firearms and collecting lead figurines.

- Home repairs - recommend keeping children away from remodeling and renovation sites or hobbies.

Developmental Screening

Developmental screening serves as a tool for identifying children who may need further evaluation.¹ The health care provider serves an important role in ensuring that eligible children are identified and referred early for appropriate intervention services. The primary care provider is often the earliest professional contact with knowledge of child development. The American Academy of Pediatrics Policy Statement on the Medical Home supports screening for developmental delays.⁸

There are many developmental screening tools that pediatric health care providers can use. Formal developmental screening tools include the Denver II, Bayley Infant Neurodevelopment Screener, Early Language Milestone Scale, and Brigance Screens. These instruments all involve direct observation and examination of the child's skills.

A study by Glascoe has demonstrated that parental report of the child's skill level is predictive of developmental delay.² This study demonstrated that by systematically asking the parent/guardian about developmental concerns the health care provider could screen for developmental delays as effectively as a formal developmental examination. Examples of parent report instruments with excellent psychometric properties include the Ages and Stages Questionnaires, Child Development Inventories, and the Parents' Evaluation of Developmental Status.¹⁰ This type of assessment tool requires much less time from the provider but can certainly be an effective method for identifying early developmental problems.

Children and families are best served when screening efforts of the health care provider are coordinated with services that are available in the community (CDC, 2002). This can be accomplished by a collaborative working relationship established between the LHD LPPP staff and the local health care provider to effectively meet the developmental needs of the child with an elevated BLL. The establishment of a collaborative relationship offers a mechanism for

¹ American Academy of Pediatrics. Developmental Surveillance and Screening of Infants and Young Children. *Pediatrics* 2001;108: 192-196.

² Glascoe F.G. Parents concerns about children's development: Prescreening technique or screening test? *Pediatrics*. 1997;99: 522-528.

timely referral to the LHD Early Intervention Program (EIP) when indicated. In addition, LPPP nursing staff is in a position to offer developmental screening if not done by the health care provider.

The potential for the risk of lead-associated neurodevelopmental problems continues after lead exposure has been remediated and BLLs reduced. Closure of a child's case by LPPP staff does not mean that the need for neurodevelopmental monitoring has ended. This highlights the need for referral to the appropriate community based programs, and the role of the health care provider in the continued assessment of the child.

There are three periods when different types of learning difficulties are typically expressed:

- First grade: Children begin acquiring basic academic skills.
- Fourth grade: They use these basic skills to learn new material.
- Sixth or seventh grade: They need higher order planning and organizational skills.

The LHD should discuss the need for appropriate long-term developmental follow-up with the health care provider and the child's parent(s) or guardian(s). Long term developmental surveillance needs to be a component of the management plan for any child with a blood lead level (BLL) ≥ 20 mcg/dL (CDC, 2002). Developmental surveillance should also be considered for a child who has a BLL that does not exceed 15-19 mcg/dL but who has other significant developmental risk factors. These risk factors can include: poverty, single-parent household, teenage mother, child abuse and poor nutrition.

If developmental delays are suspected, the health care provider should refer the child (0-3 years) to the LHD Early Intervention Program (EIP) if the parent does not object. For children older than 3 years with suspected developmental delays, the health care provider should instruct the parent or guardian to contact their local school district. In instances when a home visit is done by the LHD program staff, problems that may be identified should be brought to the health care provider's attention.

Occupational Health Clinic Locations and Phone Numbers

A. Western New York Region

Union Occupational Health Center
716-668-8800

B. Finger Lakes Region

Finger Lakes Occupational Health Services affiliated with the University of Rochester
585-244-4771
800-925-8615
www2.envmed.rochester.edu/envmed/occmec/fingerlakeswelcome.html

C. Central New York Region

Central New York Occupational Health Clinical Center affiliated with SUNY Upstate Medical University
315-432-8899
www.upstate.edu/fmed/uhfmed/cnyohcc

D. Southern Tier Region

Central New York Occupational Health Clinical Center affiliated with SUNY Upstate Medical University
315-432-8899
www.upstate.edu/fmed/uhfmed/cnyohcc

E. Adirondack Region

Central New York Occupational Health Clinical Center affiliated with SUNY Upstate Medical University
315-432-8899
www.upstate.edu/fmed/uhfmed/cnyohcc

F. Mid-Hudson / Eastern New York Region

Occupational and Environmental Health Center of Eastern New York affiliated with GHI
518-690-4420
800-419-1230
www.occmgroup.com

G. Lower Hudson Valley Region

Mt. Sinai-IJ Selikoff Center for Occupational and Environmental Medicine affiliated with Mt. Sinai School of Medicine
914-964-4737 - Hudson Valley/Yonkers Clinical Center
www.mssm.edu/cpm/selikoff_clinical_center/

II. Occupational Health Clinic Locations and Phone Numbers

A. New York City

Mt. Sinai-IJ Selikoff Center for Occupational and Environmental Medicine affiliated with Mt. Sinai School of Medicine
212-241-5555 - Manhattan Clinical Center
718-278-2736 - Queens Clinical Center
www.mssm.edu/cpm/selikoff_clinical_center/

Bellevue/NYU Occupational and Environmental Medicine Clinic affiliated with Health and Hospitals Corporation
212-562-4572
<http://www.med.nyu.edu/environmental/outreach/bnoemc.html>

B. Long Island Region

Long Island Occupational and Environmental Health Center affiliated with SUNY Stony Brook
631-444-6250
www.uhmc.sunysb.edu/prevmed/liaoehc/mission.html

C. Specialty Agricultural Clinic

New York Center for Agricultural Medicine and Health affiliated with Bassett Hospital
607-547-6023
800-343-7527
www.nycamh.com

For further information, contact your local occupational health clinic, or the New York State Department of Health at: 1-800-458-1158

CAPILLARY BLOOD SAMPLING PROTOCOL

Venous blood testing is the preferred specimen for blood lead analysis and should be used for lead measurement whenever practical. However, capillary testing is an acceptable method for initial blood lead testing if appropriate methods are followed to minimize the risk of contamination. The following procedure has been adapted from the Centers for Disease Control's Capillary Blood Sampling Protocol.

A. Materials Needed

- Soap
- Alcohol swabs. If a surgical or other disinfectant soap is used, alcohol swabs can be eliminated.
- Sterile cotton balls or gauze pads
- Examination gloves
- Lancets. The type of lancet used is largely a matter of personal preference as long as sterility is guaranteed.
- Microcollection containers
- Adhesive bandages
- Trash bags suitable for medical waste and containers for sharps.
- Storage or mailing containers if needed. If specimens require shipment, follow the U.S. P.S. or other appropriate regulations for the transport of body fluids.
- Laboratory coat and protective glasses.

Materials used in the collection procedure that could contaminate the specimen (for example, blood containers, alcohol swabs, and barrier sprays) must be lead-free. **Before selecting equipment for use in blood collection, consult the laboratory about its requirements.** In many cases, the laboratory will recommend or supply suitable collection equipment and may precheck the equipment for lead contamination. Some laboratories will provide "lead-free" tubes for blood lead screening purposes. Some instrument manufacturers also supply collection materials that are pretested for lead content. Plastic containers are better than glass microhematocrit tubes, because the latter have been known to break.

B. Preparing for Blood Collecting

All personnel who collect specimens should be well trained in and thoroughly familiar with the collection procedure and the use of universal precautions against the transmission of blood-borne pathogens.

Collection personnel should wear examination gloves whenever the potential for contact with blood exists. If the gloves are coated with powder, the powder should be rinsed off with tap water.

C. Preparing the Finger for Puncture

NOTE: Puncturing the fingers of infants younger than 1 year of age is not recommended. Puncturing of the heel or toe may be more suitable for these children.

Steps for Preparing the Child's Finger

1. Wash the child's hands thoroughly with soap and water, and then dry them with a clean low-lint or plain, unprinted non-recycled towel. Once washed, the finger must not come in contact with any surface, including the child's other fingers.
2. Grasp the finger (often the middle finger) that has been selected for puncture between your thumb and index finger with the palm of the child's hand facing up.
3. If not done during washing, massage the fleshy portion of the finger gently to increase circulation.
4. Clean the ball or pad of the finger to be punctured with the alcohol swab. Dry the fingertip using the sterile gauze or cotton ball.

Puncturing the Finger

After the finger is prepared, the puncture and subsequent steps of forming a drop of blood and filling the collection container should be performed quickly and efficiently, since any delay can make collection more difficult (for example, the blood may clot or the child may resist). Several types of lancets are suitable for puncturing children's fingers. Lancets range from small manual blades and spring-loaded assemblies to disposable self-contained units. The latter are particularly attractive since the blade is automatically retracted into the holder after use, thus reducing the risk for self injury. Many devices are available with a selection of puncture depths suitable for small children or adults.

Make the puncture swiftly, cleanly, and deep enough to allow for adequate blood flow. The site of the puncture should be slightly lateral to the ball of the finger. This region is generally less calloused, which makes puncturing easier and possibly less painful. The first drop of blood contains tissue fluids that will produce inaccurate results; it should be removed with a sterile gauze or cotton ball.

A barrier material, such as silicone that is sprayed on the finger at this point in the process, will help a distinct "bead" of blood to form and may aid in blood collection. Blood that runs down the finger or around the fingernail is no longer suitable. Blood flows better when the punctured finger is kept lower than the level of the heart. Inadequate blood flow can be improved by gently massaging the proximal portion of the finger in a distal direction, then pressing firmly at the distal joint of the punctured finger (restricting blood flow out of the fingertip) and gently squeezing the sides of the fingertip. Avoid excessive squeezing or milking which will cause tissue fluid to be expressed, compromising specimen integrity.

Steps for Puncturing the Finger and Forming Drops of Blood

1. Grasp the finger and quickly puncture it with a sterile lancet in a position slightly lateral to the center of the fingertip.
2. Wipe off the first droplet of blood with a sterile gauze or cotton ball.
3. If blood flow is inadequate, gently massage the proximal portion of the finger and then press firmly on the distal joint of the finger.
4. A well-beaded drop of blood should form at the puncture site.
5. Do not let the blood run down the finger or onto the fingernail.

D. Filling the Collection Container

The proper procedure for filling and capping collection containers is somewhat specific to the container used. As a general rule, contact between the skin and the container should be avoided. To prevent specimen clotting, blood must be thoroughly mixed with the anticoagulant after filling the container. Depending on the container and anticoagulant used, the agitation needed can range from gentle rocking to vigorous shaking. Some procedures call for the collection container to be rotated during filling so that anticoagulant will be distributed quickly through the sample. For collectors already familiar with fingerstick blood collection for other purposes (e.g., hematocrit or CBC), there is a tendency to not agitate the blood sample too strongly lest the red blood cells rupture. For blood lead tests vigorous agitation is not an issue because it is more important to prevent clotting than cell rupture.

To facilitate blood flow, many procedures call for the collection container to be held nearly horizontal, with a slight downward angle. Blood flow into the container should be uninterrupted to avoid getting air bubbles in the specimen. Most containers come with appropriate caps, and these should be applied immediately after collection. Again, consulting with the laboratory and knowing the manufacturer's recommendations are important to ensure specimen integrity and suitability for analysis.

Steps For Filling The Collection Container

1. Continuing to grasp the finger, touch the tip of the collection container to the beaded drop of blood.
2. Draw the blood into the container maintaining a continuous flow of blood.
3. When the container is full, cap or seal it as appropriate.
4. Agitate the specimen to mix the anticoagulant through the blood.
5. Check that the container is properly labeled, and place it in an appropriate storage area.
6. Stop the bleeding, and cover the finger with an adhesive bandage. Bleeding should stop quickly. If bleeding is slow to stop, apply pressure to the puncture site with a sterile gauze or a cotton ball. If bleeding continues after 3 to 5 minutes of applying pressure, consult a physician.