



New Hampshire
HEALTHY HOMES
& Lead Poisoning Prevention Program

2015

New Hampshire Childhood Lead Poisoning Screening and Management Guidelines

**New Hampshire Department of Health and Human Services
Healthy Homes and Lead Poisoning Prevention Program**
Revised, January 2015

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INTRODUCTION

Childhood lead poisoning continues to be a significant, preventable environmental health problem. Despite major strides in the elimination of lead poisoning in the population as a whole, children, who are especially vulnerable to the harmful effects of lead, continue to be exposed to this toxic metal.

Since 1984, the New Hampshire Department of Health & Human Services, Division of Public Health Services, Healthy Homes & Lead Poisoning Prevention Program (HHLPPP) has worked to reduce the number of New Hampshire children with elevated blood lead levels through comprehensive programming and has made significant strides toward eliminating childhood lead poisoning as a public health problem. The HHLPPP conducts statewide surveillance; provides medical case management and environmental inspections for children with elevated blood lead levels; provides information and referrals for lead hazard reduction; and licenses and certifies lead professionals. The HHLPPP also offers education and training, in collaboration with its partner programs, to increase community capacity for creating and maintaining lead safe and healthy housing.

New Hampshire has some of the oldest housing stock in the country. According to 2010 Census data, approximately 58% of the housing stock in New Hampshire was built prior to 1978 when lead paint was banned for residential use (U.S. Census Bureau, 2010). Children living in older houses with deteriorated lead paint or lead contaminated dust are at increased risk for lead poisoning. These children are more likely to suffer persistent developmental delays, learning disabilities, and behavior problems as a result of their exposure to lead. According to the HHLPPP, in New Hampshire, lead-based paint in older homes is the source of more than 90% of lead poisoning cases and approximately one-third of these children lived in or regularly visited a home built prior to 1978 that had recently undergone renovations.

According to the 2010 US Census, there are 84,767 children under the age of 6 residing in New Hampshire. Of these children, 27,480 are 1 and 2 years old, the most vulnerable age for lead poisoning. According to the *New Hampshire HHLPPP 2013 Lead Poisoning Surveillance Report*, an estimated 23,554 New Hampshire children ages 1 and 2 should have been tested for lead poisoning in 2013. Unfortunately, only 10,830 were tested, meaning that 61% of the children who were at the highest risk of being exposed to lead did not receive the recommended test for lead.

The Centers for Disease Control and Prevention (CDC) has established a new reference blood lead level (BLL) of 5 micrograms per deciliter (mcg/dL) at which public health intervention is recommended. Previously, the reference blood lead level was 10 mcg/dL. This change was made based on the recommendations of the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP), due to the fact that there is no known threshold below which adverse effects of lead are present.

In 2013, 77 New Hampshire children under the age of 6 had blood lead levels ≥ 10 mcg/dL, which resulted in public health nurse case management and legal enforcement. This accounted for 0.5% of children tested in

2013. However, looking at the new reference blood lead level in 2013, 1,096 children, or 7.8% of tested children, had levels of ≥ 5 mcg/dL.

Testing for elevated blood lead levels has remained low in some of New Hampshire's highest risk communities, or even declined over time. For example, testing rates for children aged 12 to 23 months in Claremont declined from 84% in 2006 to 35% in 2012. In Franklin, less than 25% of children ages 24 to 35 months were tested during 2005-2013.

This guide discusses recommendations for childhood lead screening and the medical management of lead poisoning in children.

These guidelines are divided into three sections:

- Screening Recommendations (see page 6);
- Medical Management (see page 18); and
- Environmental Investigation & Case Management (see page 24).

SCREENING RECOMMENDATIONS

Recommendations for blood lead screening focus on the population most at risk in terms of age, special populations, socioeconomic status, age of housing, and renovations occurring in the home (see Identifying Children at Risk on page 8). The goal of these guidelines is to have an efficient screening policy that is responsive to local needs and conditions.

Several factors influence the rate of lead poisoning in a community. In accordance with recommendations from the Centers for Disease Control and Prevention, cities and towns with 27% or more pre-1950 housing stock are considered high risk communities. Some communities are determined to be at an even higher risk for lead poisoning due to additional factors. These factors include the percentage of the population under the age of six; the percentage under the age of six living in poverty; the percentage of children under the age of six enrolled in Medicaid or other federal assistance programs; and special populations living in the communities. For high-risk communities, universal screening is recommended, while targeted screening is recommended for low-risk communities. Further information on these screening recommendations for high-risk and low-risk communities is included below.

UNIVERSAL SCREENING IN HIGH-RISK COMMUNITIES

In high-risk communities, the HHLPPP recommends a “universal” screening approach with all children tested at 1 year old and again at 2 years old. Older children, up to 6 years old, who have not previously been tested while living in their current residence should also be tested. If they have moved to a new residence, began attending a child care facility built prior to 1978, have been exposed to a pre-1978 renovation project, or have exhibited at-risk behavior since the time of their last blood test, a new blood test should be conducted.

TARGETED SCREENING IN LOW-RISK COMMUNITIES

A targeted approach is used in communities designated as low risk. For children between ages 1 and 2 years old who live in low-risk communities, use the *Lead Exposure Risk Questionnaire* on page 11 to identify children with individual risk factors that will require blood lead testing. This questionnaire should also be used for children ages 3 to 6 years old who have not been previously tested, have renovation activities taking place at home, have moved to a new residence, have begun attending a child care facility built prior to 1978, or have exhibited high-risk behavior.

A positive or uncertain response to *one or more* questions on the *Lead Exposure Risk Questionnaire* denotes that testing is necessary. The lead exposure risk questionnaire can be found on page 11.

All Medicaid, WIC, or Head Start-enrolled children, regardless of town of residence, are currently required to have a blood lead test at both 1 and 2 years old. In addition, children 3 to 6 years old who have not previously been tested, regardless of town of residence, should also be tested. See Table 2 for guidelines for lead screening.

TABLE 1: LEAD SCREENING DESIGNATION - NEW HAMPSHIRE CITIES/TOWNS/VILLAGES

Acworth	U	Deering	T	Hart's Location	T	New Durham	T	South Hampton	U
Albany	T	Derry	T	Haverhill	U	New Hampton	U	South Kingston	U
Alexandria	T	Dixville	T	Hebron	U	New Ipswich	T	South Sutton	U
Allenstown	T	Dorchester	U	Henniker	U	New London	T	South Tamworth	U
Alstead	U	Dover	U	Hill	U	Newbury	U	Spofford	U
Alton	T	Drewsville	U	Hillsboro	U	Newfields	U	Springfield	T
Alton Bay	T	Dublin	U	Hillsborough	U	Newington	U	Stark	T
Amherst	T	Dummer	U	Hinsdale	U	Newmarket	U	Stewartstown	T
Andover	U	Dunbarton	T	Holderness	U	Newport	U	Stinson Lake	U
Antrim	U	Durham	T	Hollis	T	Newton	T	Stoddard	T
Ashland	U	East Alstead	U	Hooksett	T	Newton Junction	T	Strafford	T
Ashuelot	U	East Alton	T	Hopkinton	U	North Conway	T	Strafford	U
Atkinson	T	East Andover	U	Hudson	T	North Hampton	T	Stratham	T
Auburn	T	East Candia	U	Intervale	T	North Haverhill	U	Success	U
Barnstead	T	East Derry	T	Jackson	U	North Salem	T	Sugar Hill	U
Barrington	T	East Hampstead	T	Jaffrey	U	North Sandwich	U	Sullivan	U
Bartlett	T	East Kingston	T	Jefferson	U	North Stratford	T	Sunapee	T
Bath	U	East Lebanon	U	Kearsarge	T	North Sutton	U	Suncook	T
Bedford	T	East Lempster	T	Keene	U	North Swanzey	U	Surry	T
Belmont	T	East Rochester	U	Kellyville	U	North Walpole	U	Sutton	U
Bennington	U	East Sullivan	U	Kensington	T	North Woodstock	T	Swanzey	U
Benton	T	East Swanzey	U	Kingston	U	Northfield	U	Swiftwater	U
Berlin	U	East Wakefield	T	Laconia	U	Northumberland	U	Tamworth	U
Bethlehem	U	Easton	T	Lakeport	U	Northwood	U	Temple	U
Boscawen	U	Eaton	U	Lancaster	U	Nottingham	T	Thornton	T
Bow	T	Effingham	T	Landaff	U	Odell	T	Tilton	U
Bowkererville	U	Elkins	T	Langdon	U	Orange	U	Troy	U
Bradford	U	Ellsworth	T	Lebanon	U	Orford	U	Tuffonboro	U
Brentwood	T	Enfield	U	Lee	T	Ossipee	T	Twin Mountain	T
Bretton Woods	T	Enfield Center	U	Lempster	T	Pelham	T	Union	T
Bridgewater	U	Epping	T	Lincoln	T	Pembroke	U	Unity	T
Bristol	U	Epsom	T	Lisbon	U	Penacook	U	Wakefield	T
Brookfield	U	Errol	T	Litchfield	T	Peterborough	U	Walpole	U
Brookline	T	Etna	U	Littleton	U	Piermont	U	Warner	U
Cambridge	T	Exeter	U	Lochmere	T	Pike	U	Warren	U
Campton	T	Farmington	U	Londonderry	T	Pinnardville	T	Washington	T
Canaan	U	Fitzwilliam	U	Loudon	T	Pittsburg	T	Waterville Valley	T
Candia	U	Francetstown	U	Lyman	T	Pittsfield	U	Weare	T
Canterbury	T	Franconia	U	Lyme	U	Plainfield	U	Webster	T
Carroll	T	Franklin	U	Lyndeborough	U	Plaistow	T	Weirs Beach	U
Center Barnstead	T	Freedom	T	Madbury	T	Plymouth	U	Wentworth	U
Center Conway	T	Fremont	T	Madison	T	Portsmouth	U	West Canaan	U
Center Harbor	U	Georges Mills	T	Manchester	U	Potter Place	U	West Chesterfield	U
Center Ossipee	T	Gilford	T	Marlborough	U	Randolph	U	West Franklin	U
Center Sandwich	U	Gilmanton	T	Marlow	U	Raymond	T	West Hampstead	T
Center Stratford	T	Gilmanton Ironworks	T	Mason	U	Richmond	U	West Lebanon	U
Center Tuffonboro	U	Gilsum	U	Melvin Village	U	Rindge	T	West Nottingham	T
Charlestown	U	Glen	T	Meredith	T	Rochester	U	West Ossipee	T
Chatham	U	Glenciff	U	Meredith Center	T	Rollinsford	U	West Peterborough	U
Chester	T	Goffstown	T	Meriden	U	Roxbury	U	West Springfield	T
Chesterfield	U	Gonic	U	Merrimack	T	Rumney	U	West Stewartstown	T
Chichester	U	Gorham	U	Middleton	T	Rye	U	West Swanzey	U
Chocorua	U	Goshen	U	Milan	T	Rye Beach	U	Westmoreland	U
Claremont	U	Grafton	T	Milford	T	Salem	T	Whitefield	U
Clarksville	T	Grantham	T	Millsfield	T	Salisbury	U	Wilmot	U
Clinton	U	Greenfield	U	Milton	U	Sanbornton	U	Wilmot Flat	U
Colebrook	U	Greenland	T	Milton Mills	U	Sanbornville	T	Wilton	U
Columbia	T	Greenville	U	Mirror Lake	T	Sandown	T	Winchester	U
Concord	U	Groton	T	Monroe	U	Sandwich	U	Windham	T
Contoocook	U	Groveton	U	Mont Vernon	U	Seabrook	T	Windsor	T
Conway	T	Guild	U	Moultonborough	T	Sharon	T	Winnisquam	T
Cornish	U	Hampstead	T	Mt Sunapee	U	Shelburne	U	Wolfeboro	U
Cornish Flat	U	Hampton	T	Munsonville	U	Silver Lake	T	Wolfeboro Falls	U
Croydon	U	Hampton Beach	T	Nashua 03060	U	Somersworth	U	Wonalancet	U
Dalton	T	Hampton Falls	T	Nashua 03064	U	South Acworth	U	Woodstock	T
Danbury	T	Hancock	U	Nashua 03062-3 zips	T	South Charlestown	U	Woodsville	U
Danville	T	Hanover	U	Nelson	U	South Chatham	U		
Davisville	U	Hanover Center	U	New Boston	T	South Deerfield	U		
Deerfield	U	Harrisville	U	New Castle	U	South Effingham	T		

T = targeted screening, U = universal screening

TABLE 2: GUIDELINES FOR LEAD SCREENING

Community Lead Screening Designation (See Table 1)	Screening Approach	Age of Child	
		1 and 2 years old	3 to 6 years old
High-risk	Universal	Test all children at both 1 and 2 years old.	Test, if not previously tested.
Low-risk	Targeted	Test all children enrolled in Medicaid or Head Start, or who are receiving WIC benefits. Test children based on individual risk factors as determined by questionnaire.	Test, if not previously tested, based on individual risk factors as determined by questionnaire or if a member of a high-risk group.

Please note: All children insured by Medicaid are currently required by federal regulations to have a blood lead test at 1 and 2 years of age. Enrolled children 3 to 6 years old must be tested if they have not previously been tested. All children enrolled in Head Start also require documentation of testing.

Identifying Children at Risk

Recommendations for blood lead screening focus on the population most at risk in terms of age, socioeconomic status, age of housing and renovation status of home, refugee status, immigration status, and potential exposures in utero and during lactation.

Risk Factor: Age

Children ages 1 to 3 years old are at particular risk for elevated blood lead levels due to increasing mobility during the second year of life, resulting in more access to lead hazards. A child that is too small to easily reach areas of highest lead exposure risk in a home (e.g., window wells) at 1 year old could test <5 mcg/dL and then, with increased mobility and the presence of normal hand-to-mouth activity, have a blood lead level \geq 5 mcg/dL at 24 months.

In addition, the developing systems of young children are more susceptible to the adverse effects of lead. National data demonstrates that lead levels peak at 18 to 36 months of age (CDC, 2007).

Risk Factor: Socioeconomic Status

Children enrolled in Medicaid (and other programs, such as WIC and Head Start, that have certain income guidelines) may be at greater risk due to the link between income and housing conditions.

Currently, lead screening is a required component of the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program because, as a group, young children enrolled in Medicaid may be more likely than other children to be exposed to lead (GAO 1998). However, CDC has recommended that states look at local data to determine if Medicaid enrolled children continue to be at greater risk for exposure (CDC, 2009). In 2012, children receiving Medicaid benefits represented 82% of all newly poisoned children in New Hampshire \geq 10 mcg/dL. The CDC's goal for testing Medicaid-eligible children for lead poisoning is 85%. In 2012, the New Hampshire Office of Medicaid tested 52% of enrolled 1 year old children and 30% of 2 year

old children for elevated blood lead level, but had only been successful in testing 18% of all children under 6 years of age. This data supports continued testing of all Medicaid enrolled 1 and 2 year old children.

In addition, documentation of lead testing at age 1 and 2 years old (or between ages 3 and 6 years old, if not previously tested or if the child has relocated to a different home or child care facility built prior to 1978) is a requirement for children enrolled in Head Start and Early Head Start.

Risk Factor: Housing

The paint industry began to decrease the amount of lead used in residential paint in 1950 and lead-based paint was banned for residential use in the United States in 1978. Housing built before 1950 poses the greatest risk to young children since lead paint was widely used for residential purposes at that time. Children are at risk due to exposure to deteriorating lead paint and lead dust; lead-based paint and dust is the source of more than 90% of New Hampshire lead poisoning cases. While 26% of housing statewide was built before 1950, the proportion of pre-1950 housing ranges from 23.7% to 64.4% in the state's highest risk areas (U.S. Census Bureau 2010). Many older housing units in the highest risk areas are deteriorating and pose a threat to young children from lead exposure hazards.

Renovations in older homes present a serious risk. In 2008, almost one of every three children with a blood lead level ≥ 10 mcg/dL lived in or regularly visited a home that had undergone renovations within the last six months. Renovation-related elevated blood lead levels are unrelated to socioeconomic indicators. The federal Renovation, Repair, and Painting law enforced by the United States Environmental Protection Agency requires contractors that disturb painted surfaces in homes, child care facilities, and schools built before 1978 to be certified and follow specific lead safe work practices.

Risk Factor: Refugee Status

Lead poisoning continues to be a problem for refugee children resettled in the United States. Research supports that most of the children are poisoned after their resettlement to the United States (CDC, 2005).

Federal standards stipulate that refugees receive a medical screening within 90 days of arrival in the United States. Although federal law does not require blood lead testing for refugee children, CDC and New Hampshire's policy is to test all refugee children ages 6 months to 16 years old at the federally required medical screening that takes place within 90 days after a refugee's arrival.

Although the risk for lead exposure among children older than 6 years old may be the result of exposure in their country of origin, many health, social, and economic burdens accompany the children to the United States. Therefore, *all* refugee children should be tested at time of arrival.

Repeat blood lead testing in three to six months for all refugee children ages 6 months to 6 years old following placement in permanent residences. Repeat blood lead level testing for older children, if at high risk, regardless of initial test results.

Children who mouth or eat non-food items are at risk for lead poisoning regardless of the age of their housing. Malnutrition is common in refugee populations, with anemia as a major concern. Anemia can enhance lead absorption and thus increase the risk for elevated blood lead levels, even in housing with minimal lead exposure hazards (CDC, 2005).

The CDC's Lead Poisoning Prevention Program and the Office of Refugee Resettlement have developed the *Lead Poisoning Prevention in Newly Arrived Refugee Children* tool kit, a valuable resource for providers who treat refugee populations, in response to the increasing number of refugee children entering the United States and subsequently developing elevated blood lead levels.

Risk Factor: Immigrant Status

Recent immigration is a risk factor for childhood lead poisoning. Children from some immigrant communities are at greater risk for having a higher blood lead level, even outside of the typical 1 to 6 year old age range. It is recommended that health care providers test all immigrant children based upon CDC's *Lead Poisoning Prevention in Newly Arrived Refugee Children* tool kit. Health care providers should learn about common sources of lead exposure in the populations they see in their offices and clinics and assess a child's risk by gathering information from the family on potential use of lead contaminated foods, folk medicines, and occupations. Education must be provided to these families and their children about the lead hazards they may encounter here in the United States.

International Adoptions: The American Academy of Pediatrics recommends internationally adopted children be tested regardless of age when they arrive to the United States due to their increased risk for lead exposure. New Hampshire physicians should re-test these children based upon New Hampshire's Screening & Management Guidelines.

Risk Factor: Exposures in Utero and During Lactation

Lead in the blood of a pregnant woman will cross through the placenta and expose the fetus to the toxic effects of lead in utero. All pregnant women should receive anticipatory guidance on preventing lead poisoning during pregnancy, including how to identify the major sources of lead in their environment and how to prevent exposure.

Blood lead testing of all pregnant women in the United States is not recommended. Testing should be done for pregnant women with identified risk factors (e.g., occupational environment, has a lead exposed child, recent immigrant or refugee). Any pregnant women with a blood lead level ≥ 5 mcg/dL during pregnancy should have an occupational and environmental assessment and be provided with further education to eliminate the source of lead. See Table 5 to understand occupations with potential lead exposures.

For more information on follow up testing and management of an elevated blood lead level in a pregnant or lactating woman, reference Table 5-3 in the CDC's *Guidelines for the Management of Lead Exposure in Pregnant and Lactating Women*. HHLPPP's factsheet on "Lead and Pregnancy" is available in the Appendix.

Management at the Time of Delivery: Umbilical cord or neonatal blood lead levels should be measured to establish a baseline for clinical management. The infant's pediatrician should be informed of the blood lead level so the appropriate follow up testing can take place. Follow up blood lead testing is indicated for neonates and infants with a blood lead level ≥ 5 mcg/dL according to the schedules in Tables 5-1 and 5-2 of the CDC's *Guidelines for the Management of Lead Exposure in Pregnant and Lactating Women*.

Once the child is 6 months of age, follow the recommendations in the CDC's *Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention* to understand when to re-test.

Lactation: Transfer of lead can occur from maternal plasma to breast milk. Human breast milk is specific to the needs of infants because it is a complete and ideal source of nourishment for the first year of life. Measuring breast milk for lead levels is not recommended. Mothers with blood lead levels up to 40 mcg/dL can still breast feed their children. Any mother with a confirmed blood lead level ≥ 40 mcg/dL should pump and discard the breast milk.

Infant Formula: It is important to be certain that infant formula that is reconstituted is not contaminated with tap water containing lead. When making formula, make certain the tap water from the cold water facet has run for more than 3 minutes to completely flush the water lines. The water can then be heated. Bottled or filtered lead-free water can also be used to make formula.

Practitioners can find more specific information on pregnancy and lactation in the CDC's *Guidelines for the Management of Lead Exposure in Pregnant and Lactating Women*.

Lead Exposure Risk Questionnaire for Children Living in Targeted Screening Communities

The *Lead Exposure Risk Questionnaire* on [page](#) stimulates dialogue between the health care provider and the parent about whether or not an individual child should be tested for lead poisoning. It also gives health care providers the opportunity to educate families about lead hazards.

Core Questions

The recommended *Lead Exposure Risk Questionnaire* contains five core questions. Providers may choose to expand the questionnaire to include optional questions based on their knowledge of risk factors present in their communities.

- A "yes" response to *any* of the questions indicates a child should be tested.
- A "don't know" response to questions three and four indicates the child should be tested.

Optional Questions

Providers may have knowledge about local conditions other than housing (e.g., industry, ethnic sources) which put children at increased risk of exposure to lead. If a provider's experience indicates it is likely that

A "Yes" to any question on the *Lead Exposure Risk Questionnaire* indicates testing is necessary.

children in their practice may have other risk factors, please consider adding the appropriate questions from Table 3 to the questionnaire that is routinely used. Electronic copies of the *Lead Exposure Risk Questionnaire* can be obtained by contacting the HHLPPP at 603-271-4507 or through the program website at www.dhhs.state.nh.us/dphs/bchs/clpp/index.htm and is included in the **Appendix**.

Indications for Additional Screening

These guidelines are intended as minimum recommendations. Providers should use their judgment and knowledge of their patient population to make the final decisions about who to test. If a provider becomes aware of a known exposure for a child after the age of 2, regardless of whether a child lives in a high- or low-risk area, additional screening may be needed. The following outlines some of the indications for additional screening.

Recent move or renovations: A child's risk for exposure may increase if the family has relocated to older housing or if the child spends time in an older home or child care facility that has recently been repaired or renovated.

Pica and ingestion of non-food items: Pica, or a pattern of eating non-food materials, increases a child's risk of lead exposure. Swallowed foreign bodies, such as curtain weights, lead fishing sinkers, lead shot, jewelry, pendants, and paint chips have been linked to poisoning in children. Parental hobbies, such as hunting, fishing, ceramics, making stained glass, and furniture refinishing may involve lead-containing materials, which may be accessible to a child (see page 21 for management of acute foreign body ingestion).

Parental request: Parents may express concern about their child's potential lead exposure because of spending time in older housing or child care facility, nearby construction or renovation, an elevated blood lead level in a neighbor's child, or exposure through an adult's occupation or hobby. Such information may be valuable in highlighting potential exposure.

Symptomatic children: Children who have developmental delays, unexplained seizures, neurological symptoms, abdominal pain, or other symptoms consistent with lead poisoning should have a venous blood lead level drawn as part of their diagnostic exam.

Other sources: Practitioners should also be alert to the potential for exposure from unusual sources of lead. The CDC estimates that $\geq 30\%$ of current elevated blood lead levels do not have an immediate lead paint source and numerous studies indicate that lead exposures result from multiple sources. Lead is used in thousands of applications, all of which constitute potential exposure sources. Evidence suggests that for children with blood lead levels < 10 mcg/dL, no single exposure source predominates.

Lead Exposure in U.S. Children, 2008: Implications for Prevention provides extensive information concerning non-paint sources of lead exposure (Levin et al. 2008). Table 4 highlights some of these sources.

LEAD EXPOSURE RISK QUESTIONNAIRE

Child's Name:	DOB:
Health Care Provider's Name:	

Please answer questions 1 through 5. Use a check (✓) to mark the box next to your answer choice.

Questions

Child's Age: _____ Date: _____

1	Is your child enrolled in Medicaid?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
2	Does your child receive WIC or Head Start benefits?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
3	Does your child live in or regularly visit a house (or child care facility) that was built before 1978?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
4	Does your child live in or regularly visit a house (or child care facility) built before 1978 with recent or ongoing renovations or remodeling (within the last six months)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
5	Does your child have a sibling or playmate that has or did have lead poisoning?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know

A "Yes" response to *any* of the questions indicates the child should be tested. A "don't know" response to questions 3 and 4 indicates the child should be tested.

For office use only: Based on responses, is a blood lead test indicated? Yes No

HEALTHY HOMES & LEAD POISONING PREVENTION PROGRAM



1-800-897-LEAD

TABLE 3: LEAD EXPOSURE RISK QUESTIONNAIRE OPTIONAL QUESTIONS

Suggested Questions	Risk Factor	Rationale
Does your child live with an adult whose job or hobby involves exposure to lead?	Take-home lead	Particles and dust can be brought home on work clothes and equipment and expose children. See Table 5 for a list of occupations and hobbies that can contribute to this risk factor.
Have you ever been told that your child has lead poisoning? Have you recently moved?	Personal or family history	A child's environment is the likely source of lead exposure hazards. Determining whether a child's current or recent housing may contain lead paint will reveal risk.
Have you seen your child eating paint chips, soil, or dirt? Does your child have greater than normal hand-to-mouth activity? Does your child mouth surfaces?	Behavior	These behaviors may indicate a child has an increased risk of ingesting lead.
Have you been told that your child has low iron or anemia?	Associated medical problems	Anemia may be the result of lead's interference with the body's ability to make red blood cells.
Does your child live near an active lead smelter, a battery recycling plant, a municipal incinerator, or other industry likely to release lead into the environment?	Industrial exposure	Industries that release lead into the environment may increase the likelihood of exposure for children in the surrounding community.
Has your child ever been given home remedies (e.g., azarcon, greta, pay-loo-ah)?	Cultural exposures	Home remedies commonly used in some cultures may contain high concentrations of lead.
Does your family use pottery, ceramic ware, or leaded crystal for cooking, eating, or drinking?	Household exposures	Imported pottery used in cooking may contain lead and create an ongoing exposure.
Was your child born outside the US? Has your child ever lived outside the US?	Personal or family history	High lead emissions from leaded gasoline and other sources exist worldwide.
Does your child live within one block of a major highway or busy street?	Environmental exposures	Heavily traveled roads are likely to be lined with contaminated soil due to fallout from leaded gasoline.
Do you use hot tap water for cooking or drinking?	Environmental exposures	Lead solder used in old pipes can contaminate drinking water. Hot water dissolves lead in pipes more easily than cold water.

TABLE 4: OTHER SOURCES OF LEAD

Potential Sources	More Information
Air	During the 20th century, leaded gasoline was the predominant source of airborne lead. Today, industrial emissions predominate. Demolition of old buildings also contributes to local air lead levels and can increase blood lead levels in children.
Candy	High lead levels have repeatedly been found in candy imported from Mexico. In November 2006, the US Food and Drug Administration (FDA) reduced its recommended maximum lead level for candy consumed by children from 0.5 to 0.1 parts per million (ppm).
Consumer Goods	<p>According to the Consumer Product Safety Commission (CPSC), lead is the most frequently recalled substance that could result in poisoning. Consumer goods with high lead content are found regularly. The CPSC has information about product recalls at www.cpsc.gov. Items that can contain lead include:</p> <ul style="list-style-type: none"> • Plastic bread bags (printing ink) that are turned inside out; • Children's products (for more information, see Schmidt, 2008 and National Center for Healthy Housing, 2001); • Polyvinyl chloride (PVC); and • Imported vinyl mini-blinds.
Drinking Water	Exposure to lead from drinking water may be underestimated. See HHLPPP's fact sheet on "Lead in the Environment" in the Appendix for information on reducing lead exposure risks from water. The United States Environmental Protection Agency (EPA) has developed guidelines to help schools manage lead in their drinking water that can be found at http://water.epa.gov/drink/info/lead/ . The New Hampshire Department of Environmental Services, Drinking Water and Groundwater Bureau is available for technical assistance and can be reached at 1-800-852-3345 x 2513 or www.des.nh.gov .
Ethnic Remedies, Cosmetics, and Goods	Folk medicines and remedies from many cultures can contain high lead levels. Traditional Mexican remedies were the earliest focus, but lead poisonings in six states and one death have been linked to Ayurveda, a traditional South Asian medicine. Other items of concern include Arzacon, Greta, Pay-loo-ah, Alarcon, Kohl, Bali Goli, Coral, Ghasard, and Liga/Rueda. Before purchasing any imported goods, such as spices, children's toys, and jewelry, check the Consumer Product Safety Commission web page at www.cpsc.gov . See HHLPPP's fact sheet on "Lead Hazards" in the Appendix.
Glasses and Dishes	Leaded crystal contains 24-32% lead oxide. Crystal decanters and glasses can release high amounts of lead in a short time, especially with cola and acidic food. The US Food and Drug Administration (FDA) has cautioned that children and pregnant women should avoid frequent use of crystal glassware and babies should not use lead crystal bottles. Relatively new, commercially manufactured ceramic dinnerware has also been cited.
Soil	Soil from play areas has a larger impact on children's blood lead levels than soil from other areas. Blood lead levels can rise 1-5 mcg/dL for every 1,000 ppm increase in soil lead. See HHLPPP's fact sheet on "Lead in the Environment" in the Appendix for information on ways to reduce exposure risks.
Parental Occupations and Hobbies	Lead dust from work or hobbies inadvertently carried by parents settles on surfaces and workers' clothing, where it can be ingested or inhaled by young children. Children of lead-exposed workers have disproportionately higher blood lead levels. See Table 5 for more information on jobs and hobbies that may exposed adults to lead and HHLPPP's fact sheet on "Take-Home" Lead in the Appendix for more information.

TABLE 5: JOBS AND HOBBIES THAT MAY EXPOSE ADULTS TO LEAD

Manufacturing	Construction	Hobby Sources
Lead acid batteries Cable, wire products, solder Firearms, bullets, explosives Rubber or plastics	Painting or paint removal (sanding, abrasive blasting, scraping, torching, stripping, heat gun applications)	Home remodeling Melting lead for fishing weights, bullets, or toys
Metal Working (with lead-containing metals)	Remodeling/ renovations	Target shooting
Foundry work, casting, forging	Plumbing, glazing, brick laying	Using lead glazes in ceramics
Grinding	Lead burning	Backyard scrap metal recycling, radiator repair
Circuit board manufacturing and recycling	Construction/ repair of bridges, water towers, tanks	Stained glass making
Repair	Welding or cutting materials with lead-coated or lead alloys	Burning painted wood
Automotive radiator repair, auto body work		Other Sources
Ship repair		Cleanup at firing ranges
Welding, cutting, sanding		Using lead-containing paints, inks, pigments, glazes
Grinding of lead alloys or lead-coated surfaces		Working at municipal solid waste incinerators
Soldering, electronics repair		
Repair work that disturbs lead paint		

SCREENING METHODS

Screening should be done by blood lead measurement of either a venous or capillary specimen. While a venous sample is preferable for the purpose of accuracy, obtaining capillary samples may be a more practical option at some screening sites. Elevated capillary blood lead levels are considered presumptive and should be confirmed with a venous specimen. Contamination of capillary samples can be effectively eliminated if proper technique is followed. A CD-ROM presentation titled *CDC Guidelines for Collecting and Handling Blood Lead Samples - 2004* is available from CDC. Radiologic examination of the long bones is unreliable for diagnosing acute lead poisoning and should not be done routinely.

Portable Lead Testing Machines: Certification and Reporting Requirements

In-office use of portable lead testing machines (e.g., Lead Care II) is an acceptable method as test results can be available immediately and necessary follow-up venous samples can be collected at once. Health care providers using this method of blood lead analysis must meet all Clinical Laboratory Improvements Amendments (CLIA) requirements and any necessary New Hampshire licensing requirements. By law, all blood lead test results for New Hampshire residents must be reported to DHHS. With use of the portable testing machines, reporting of blood lead results becomes the health care provider's responsibility. Please contact the

HHLPPP at 603-271-4507 to discuss reporting requirements and the most efficient way to report blood lead results.

PROVIDER AND LABORATORY REPORTING REQUIREMENTS

The Health Insurance Portability and Accountability Act (HIPAA) provides a specific waiver for personal medical information reported to public health officials (Section 164.512(b)). By the same law, HHLPPP is required to hold this information highly confidential. To maintain privacy, many security features are used in HHLPPP's offices, including administrative, physical, and computer protections.

In accordance with RSA 130-A and He-P 1600, the following are the timelines for reporting blood lead information to the HHLPPP:

- ≥ 45 mcg/dL must be reported within 24 hours of analysis;
- 20 – 44 mcg/dL must be reported within 3 days of analysis;
- 10 – 19 mcg/dL must be reported within 10 days of analysis; and
- 0 – 9 mcg/dL must be reported within 15 days of analysis.

Per RSA 130-A, the following patient information shall be reported in each blood lead analysis report:

- Patient's name, date of birth, race and ethnicity, gender, and street address (including town or city of residence);
- Name of patient's parent or guardian if the patient is aged 15 years or younger;
- Occupation of patients 16 years and older;
- Name of patient's employer when the blood test is performed as a requirement of the patient's occupation;
- Whether specimen is a venous or capillary sample;
- Submitting laboratory's name, address, and telephone number;
- Name of referring laboratory, if applicable;
- Name and address of health care provider ordering the test;
- Dates of sample collection and sample analysis;
- Method of the analysis;
- Blood lead analysis results; and
- Results of erythrocyte protoporphyrin analysis and zinc protoporphyrin analysis used to identify anemia and elevated blood lead levels, if conducted.

MEDICAL MANAGEMENT

The HHLPPP's recommendations for follow-up of elevated blood lead levels are based on CDC's guidance document, *Managing Elevated Blood Lead Levels Among Young Children* (2002). The HHLPPP's intent is that clinicians use these recommendations as a guide, not as rigid rules, for making decisions regarding the management of children with elevated blood lead levels.

Medical management is part of the comprehensive follow-up care for a child with lead poisoning. Comprehensive services should include the coordination of efforts between the child's health care provider; the HHLPPP's case manager and environmental investigator; home visits by a nurse, social worker, or community health worker, when available; and referral for early intervention services or special education services, when appropriate.

ACTION BASED ON CAPILLARY TESTING

When the result of a capillary blood lead test is elevated (≥ 5 mcg/dL), providers should obtain a confirmatory venous blood lead level. Recommended timeframes for obtaining confirmatory tests are listed in Table 6.

TABLE 6: RECOMMENDED ACTION FOR CAPILLARY BLOOD LEAD LEVEL

Capillary Blood Lead Level	Recommended Action
<5 mcg/dL	<ul style="list-style-type: none"> No confirmation needed. Discuss test results with family. Discuss hand-to-mouth activity, hand washing, and sources of lead exposure (e.g., lead-contaminated paint; dust and soil, particularly near streets and roadways; lead from a household member's job; ceramic ware, cultural remedies, imported food, costume jewelry, vinyl products, and lead in plumbing and water). Encourage good nutrition (iron, calcium, and vitamin C); consider referral to WIC. Re-test from the time they crawl until 6 years old and based on risk.
5-9 mcg/dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> If under age of 3, obtain confirmatory venous blood lead level within three to six months. If over age of 3, re-test based on risk factors. Provide HHLPPP's factsheet on "Lead and Children" (in Appendix) to parent. Evaluate risk to, and consider testing for, other children in the home. Evaluate risk to, and consider medical referral for, other household members (especially pregnant women). Add notation on blood lead level to child's medical record for future neurodevelopmental monitoring.
10-19 mcg /dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> Obtain confirmatory venous blood lead level within 1 month. Advise activities, including those provided by early intervention/stimulation programs (e.g., Early Start). Recommend family contact the HHLPPP at 1-800-897-LEAD (5323).
20-44 mcg /dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> Obtain confirmatory venous blood lead level within 1 week.
45-69 mcg /dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> Obtain confirmatory venous blood lead level within 48 hours.
≥ 70 mcg/dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> If symptomatic, admit to pediatric intensive care unit for treatment. Obtain confirmatory venous blood lead level immediately.

ACTION BASED ON CONFIRMATORY VENOUS BLOOD LEAD LEVEL TESTING

TABLE 7: RECOMMENDED ACTION FOR VENOUS BLOOD LEAD LEVEL

Venous Blood Lead Level	Recommended Action
<5 mcg/dL	<ul style="list-style-type: none"> • Provide HHLPPP 's factsheets on "Lead and Children" and "Lead and Nutrition" (in Appendix) to parents. • Re-test per screening guidelines and based on risk.
5-9 mcg/dL	<ul style="list-style-type: none"> • Provide HHLPPP 's factsheets on "Lead and Children" and "Lead and Nutrition" (in Appendix) to parents. • If under age of 3, re-test in three to six months. If over age of 3, re-test based on risk factors.
10-19 mcg/dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> • Test siblings younger than 6 years old. • Test for iron deficiency. Prescribe iron if needed. • Obtain follow-up venous blood lead level within three months. • Inform parent of follow-up by the HHLPPP for education, case management, and environmental assessment. • If persistent 15-19 mcg/dL blood lead level (two separate, consecutive tests at least 90 days apart), consider referral for developmental evaluation.
20-39 mcg/dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> • Evaluate medical status. • Consider abdominal films. • Consider referral for developmental evaluation. • Obtain follow-up venous blood lead level every one to two months until blood lead level <20 mcg/dL. • Consider chelation on a case-by-case basis for blood lead level 30-39 mcg/dL. If child is chelated, follow guidelines on page 22. Discontinue iron during chelation therapy.
40-69 mcg/dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> • If symptomatic, admit to Pediatric Intensive Care Unit (PICU) for treatment. • If asymptomatic, admit to hospital for treatment. • Verify blood lead level prior to chelation with second venous sample. • Choose appropriate chelating agent. Discontinue iron during chelation therapy. • Ensure that child is discharged to or is living in a lead-safe environment. • Re-test 1-2 weeks after chelation. • Re-test and re-treat as needed per American Academy of Pediatrics (AAP) treatment guidelines. • For guidance on chelation, contact the New England Pediatric Environmental Health Specialty Units (PEHSU) at Children's Hospital at 1-888-244-5314 and/or follow AAP Treatment Guidelines.
≥70 mcg/dL	<p>Manage as above AND</p> <ul style="list-style-type: none"> • Medical emergency! Admit for parenteral chelation. If symptomatic, admit to PICU.

CLINICAL EVALUATION

Medical History

The medical and developmental history of any child with a confirmed elevated blood lead level is an important part of the child's clinical evaluation. The health care provider should ask the parent or guardian about risk factors and any symptoms the child may be exhibiting, such as: the child's mouthing activities; history of pica; any family history of lead poisoning; lethargy; intermittent vomiting; and stomach pain. The results of any previous blood lead testing should be reviewed. The child's developmental progress should be monitored closely, and the child referred to an early intervention program for further assessment if any developmental delays are noted.

Environmental History

The health care provider should ask about the age and condition of the child's primary residence and other places that the child spends significant time, such as child care facilities. Remodeling and repainting in pre-1978 housing may put a child at increased risk of lead exposure. The occupations and hobbies of the adults with whom the child spends time may also expose a child to lead.

Nutritional History and Assessment of Iron Status

As part of a complete evaluation, a child with an elevated blood lead level should be evaluated for nutritional problems. Deficiencies of calcium and iron may increase lead absorption or toxicity. Because the absorption of lead may be increased when the stomach is empty, smaller and more frequent meals may be helpful in decreasing the amount of ingested lead that is absorbed. See HHLPPP's factsheet on "Lead and Nutrition" in the Appendix.

Determining a child's iron status and treating iron deficiency are important components in evaluating children with elevated blood lead levels. Determining iron status can be done using laboratory tests such as a complete blood count (CBC), mean corpuscular volume (MCV), serum ferritin, transferrin saturation, or by fluorometric assay of free erythrocyte protoporphyrin (EP or FEP).

Although there is a relationship between EP results and blood lead levels, the results are confounded by concomitant iron deficiency and show poor correlation with blood lead levels ≥ 25 mcg/dL. EP tests may be useful in evaluating children with blood lead levels ≥ 25 mcg/dL and/or whose blood lead levels do not show a steady decline in response to medical and environmental interventions. In such situations, these measures may assist in differentiating blood lead level rebound after treatment from the effects of re-exposure (CDC, 2002).

Symptoms

Most children, particularly those with low-level elevations, will not exhibit clinical symptoms. Early symptoms are often subtle and non-specific, and they can be similar to symptoms seen in more common childhood illnesses.

Symptomatic lead poisoning without encephalopathy is characterized by one or more of the following symptoms: decrease in play activity, lethargy, anorexia, sporadic vomiting, intermittent abdominal pain, and constipation. Acute lead encephalopathy is characterized by some or all of the following symptoms: coma, seizures, bizarre behavior, ataxia, apathy, incoordination, vomiting, alteration in the state of consciousness, and subtle loss of recently acquired skills. Any one of these symptoms, associated with an elevated blood lead level, is an acute medical emergency (CDC, 1991).

It is critical that medical management be accomplished in coordination with the environmental management of a case. The HHLPPP's environmental staff addresses a child's environmental history during the home investigation. To ensure that each child receives coordinated, comprehensive care, the HHLPPP encourages providers to consult with the nurse case managers at 603-271-4507.

Physical Examination and Developmental Assessment

Once it is identified that a child has an elevated blood lead level, this history should be included in the child's problem list. In addition, long-term developmental surveillance should be part of the management plan for any child with a history of elevated blood lead level. During a physical examination, pay particular attention to the child's psychosocial, language, and neurologic development. Refer a child with language delay or other neurobehavioral or cognitive problems to programs such as early intervention programs and special education. For children with obvious symptomology, such as inattentiveness or attention deficit hyperactivity disorder (ADHD), consideration should be given for referral to a developmental specialist or a child psychologist. Because elevated blood lead level affects skills critical to academic success, watch for emerging difficulties at critical transition points: first, fourth, and sixth/seventh grades (CDC, 2002).

Radiologic examination of the long bones is unreliable for diagnosing acute lead poisoning and should not be done routinely.

Acute Foreign Body Ingestion

Foreign bodies represent another source of environmental lead that may result in an elevated blood lead level or lead toxicity. This is especially associated with prolonged retention in the stomach, where gastric acids make the lead more soluble. As with any foreign body ingestion, there should be a chest and abdominal x-ray to locate the object(s). Appropriate medical intervention is based on the location of the object(s) (Fergusson, et al., 1997). A consultation with a pediatric gastroenterologist and/or surgeon is recommended.

Radiologic examination of the abdomen may show radiopaque foreign material if the material was ingested within the preceding 24 to 36 hours. Abdominal films should be considered if the child was seen, or suspected of, ingesting paint chips or other foreign bodies that may contain lead. In such cases, treatment with a cathartic may be recommended. A venous blood lead level should be obtained immediately. Repeat every 3-5 days until the foreign body is passed. The initial evaluation and treatment should be coordinated by the Northern New England Poison Center and the local hospital emergency department. The HHLPPP will provide follow-up case management. The Northern New England Poison Center can be reached at 1-800-222-1222.

Table 8 outlines essential components of the recommended clinical evaluation for any child with an elevated venous blood lead level (≥ 5 mcg/dL).

TABLE 8: CLINICAL EVALUATION OF A CHILD WITH AN ELEVATED BLOOD LEAD LEVEL (≥ 5 MCG/DL) (CDC, 1997)

<p>Medical history</p> <p>Ask about:</p> <ul style="list-style-type: none">• Symptoms• Developmental history• Mouthing activities• Pica• Previous blood lead level measurements• Family history of lead poisoning
<p>Environmental history</p> <p>Ask about:</p> <ul style="list-style-type: none">• Age, condition, and ongoing remodeling or repainting of primary residence and other places that the child spends time (including secondary homes and child care facilities). Determine whether the child may be exposed to lead-based paint hazards at any or all of these places.• Occupational and hobby histories of adults with whom the child spends time. Determine whether the child is being exposed to lead from an adult's workplace or hobby. See Table 5.• Other sources of potential lead exposure. The risk factors listed starting on page 8 may prove helpful in identifying other sources.
<p>Nutritional history</p> <ul style="list-style-type: none">• Take a dietary history.• Evaluate the child's iron status using appropriate laboratory tests.• Ask about history of food stamps or WIC participation.
<p>Physical examination</p> <ul style="list-style-type: none">• Pay particular attention to the neurologic examination and to the child's psychological and language development.

USE OF CHELATING AGENTS

In general, the HHLPPP recommends that chelation therapy be initiated on children with a venous blood lead level of ≥ 45 mcg/dL. Several pharmacologic agents, or chelating agents, can reduce blood lead levels. There is no single recommendation for course of treatment and the individual circumstances of each child should be considered before chelation therapy is begun.

A pediatrician experienced in treating children with lead poisoning should be consulted. The Pediatric Environmental Health Specialty Units (PEHSU) for New England is Children's Hospital Boston at www.childrenshospital.org/pehc. The health care provider can call the page operator (at 617-355-6369) and ask for the Pediatric Environmental physician on call.

KEY POINTS TO CONSIDER REGARDING CHELATION THERAPY

- Consult with a pediatrician experienced in managing care for children with elevated blood lead levels.
- A second venous blood lead level should be obtained prior to making a decision regarding chelation therapy, unless the child is symptomatic. A symptomatic child should be admitted to a pediatric intensive care unit, a second lead level drawn, and treatment started. Treatment should be discontinued if the second lead level does not warrant chelation therapy.
- Outpatient chelation therapy after initial treatment in hospital can be done in the home when supervised by a visiting or public health nurse.
- All chelation therapy must be done with the child living in a lead-safe environment. The HHLPPP's environmentalists are available to inspect the child's home and determine if the property is lead-safe.
- Succimer is the first drug of choice for chelation therapy, followed by Calcium disodium versenate or Calcium disodium edetate (CaNa₂EDTA). D-penicillamine is considered a third-line drug.

Succimer is recommended for asymptomatic children with blood lead levels 45-70 mcg/dL, although its use for levels in the 30-39 mcg/dL range can be considered on a case-by-case basis (American Academy of Pediatrics, 2005).

For symptomatic children and/or for children with venous blood lead levels ≥ 70 mcg/dL, parenteral therapy with CaNa₂EDTA is recommended while hospitalized in a pediatric intensive care unit.

CaNa₂EDTA should also be used for children that are allergic to or react to succimer (American Academy of Pediatrics, 2005).

- Although chelation therapy at blood lead levels of 20-44 mcg/dL may lower blood lead concentrations, studies have shown that it does not reverse or diminish cognitive or other behavioral or neuropsychological effects of lead (Rogan et al., 2005).
- Iron therapy should be discontinued during chelation therapy.
- Provocative chelation with CaNa₂EDTA is no longer recommended.

KEY POINTS TO CONSIDER POST-CHELATION

- A child, if hospitalized, should be released only to a lead-safe environment.
- A blood lead level should be obtained one to two weeks after chelation.
- Re-test and re-treat as per AAP's *Lead Exposure in Children: Prevention, Detection, and Management* (2005). The 1995 AAP treatment guidelines also provide a valuable review of pharmacologic agents.

ENVIRONMENTAL INVESTIGATION & CASE MANAGEMENT

DECLARATION OF ELEVATION

New Hampshire statute (RSA 130-A) requires that the Department of Health and Human Services investigate all cases of lead poisoning in children under the age of 6 years old whose venous blood lead level is ≥ 10 mcg/dL, as reported on two separate venous tests. In lieu of a second venous lead level, the law allows the child's health care provider to declare the first venous test as elevated. For convenience and to minimize testing, providers can issue a standing order to inspect any child's residence based on the first venous test ≥ 10 mcg/dL. Providers may also make this determination on a case-by-case basis. A Declaration of Elevation form is included in the [Appendix](#), which providers can complete and fax to the HHLPPP at 603-271-3991.

IDENTIFYING THE LEAD SOURCE

Identifying sources of lead exposure and preventing future exposure are the most important factors in managing childhood lead poisoning. The HHLPPP provides environmental investigations of the primary residence for any child under the age of 6 years old with a confirmed venous blood lead level of ≥ 10 mcg/dL. A HHLPPP case manager makes a referral for an environmental investigation after the health care provider has informed the parent of the lead test result. The purpose of these investigations, conducted by environmentalists from the HHLPPP, is to determine whether lead exposure hazards exist in the child's environment and to provide guidance on how to eliminate or reduce any sources of exposure. The HHLPPP provides the child's health care provider with a summary of the investigation findings and recommendations to assist the practitioner in counseling the family and in determining appropriate medical management.

FOLLOW-UP BLOOD LEAD TESTING

The higher the blood lead level and/or the younger the child, the more frequent the monitoring should be. Venipuncture is the preferred draw method for follow-up testing. A child who has had significant lead exposure in the past and who is now living in a lead-safe environment may continue to have blood lead levels ≥ 10 mcg/dL. Health care providers should continue to monitor these children with follow-up blood lead levels, but may do so at less frequent intervals than is normally recommended. Follow-up for these children should be considered on a case-by-case basis in consultation with the HHLPPP.

Medical management includes follow-up blood lead testing. Table 9 presents the suggested frequency of follow-up tests to be used as guidance. Case managers and primary care physicians should consider individual patient characteristics and caregiver capabilities and adjust the frequency of follow-up tests accordingly.

INTERPRETING AND MANAGING BLOOD LEAD LEVELS BELOW 10 MCG/DL

In New Hampshire, ≥ 10 mcg/dL is the blood lead level that prompts public health action, per RSA 130-A. However, research has shown strong evidence of harmful effects on children's growth and development at levels < 10 mcg/dL. In 2012, the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) issued updated recommendations to the CDC. The new recommendation, adopted by the CDC, is a *reference value*

TABLE 9: SCHEDULE FOR FOLLOW-UP BLOOD LEAD TESTING FOR CHILDREN UNDER 6 YEARS OF AGE

Venous Blood Lead Level (mcg/dL)	Early Follow-Up (First 2-4 tests after identification)	Late Follow-Up (After blood lead level begins to decline)
5-9	Re-test in 3-6 months (if younger than 3 years old); Re-test based on risk factors (if older than 3 years old)	
10-19	Every 3 months	Every 6-9 months
20-39	Every 1-2 months	Every 3-6 months
40-69	Every 1-2 weeks after chelation	Every 1-3 months
>70	As soon as possible	Chelation with subsequent follow-up

based on the 97.5th percentile of blood lead level distribution in children 1 to 5 years of age in the United States. Based on current data, that blood lead level is 5 mcg/dL. A reference value is useful to characterize individual results as “elevated” or “not elevated” in comparison to the population average or mean value. More information on this new recommendation can be found at CDC’s website

http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm.

EDUCATING FAMILIES

The families of children with blood lead levels ≥ 5 mcg/dL need information about the potential adverse health effects of an elevated lead level and the need for follow-up testing to monitor the child’s blood lead level until it returns to a more acceptable range. Education should be reinforced at follow-up visits, as needed. Low literacy fact sheets are attached in the Appendix and available in other languages by contacting the HHLPPP at 603-271-4507. For non-English speaking families, consider using the Language Line at 1-866-874-3972 to ensure that lead information is accurately conveyed and understood.

Good nutrition is important in reducing the absorption and the effects of lead. If there are poor nutritional patterns, a discussion with the parents should include the importance of adequate calcium and iron intake, and the value of regular meals and healthy snacks. Low- to moderate-income families with children under the age of 6 years old should be referred to the Supplemental Food Program for Women, Infants, and Children (WIC) Program to receive supplemental nutritious foods and nutrition education. For more information about New Hampshire’s WIC Program, parents can call 1-800-WIC-4321. Families can also be referred to community health centers, child health programs in local community agencies (e.g., Visiting Nurse Associations), or other professional and community resources for nutrition education. For information on local resources, contact the Family Resource Connection at 1-800-298-4321.

All families need information about the sources of lead exposure and suggestions on how to reduce their child’s exposure to lead. The major sources of high-dose lead poisoning are ingestion of lead-based paint, dust from that paint, and take-home exposure from parents’ occupations and hobbies. Parents should be told of the potential dangers of chipping and peeling lead-based paint, the potential hazards of renovating older homes, and the need for lead-safe work practices if their occupations and/or hobbies expose them to lead.

The HHLPPP’s staff is a resource to all families. Program staff can be contacted at: 603-271-4507, the in-state toll-free number 1-800-897-LEAD (5323), or www.dhhs.nh.gov/dphs/bchs/clpp/index.htm. The HHLPPP’s website has links to various fact sheets for families, providers, and contractors/renovators, as well as links to other resources.

APPENDIX

Lead Exposure Risk Questionnaire

Declaration of Elevated Test Result Form

Screening Guidelines Summary Sheet

Lead and Pregnancy

Lead in the Environment

Lead Hazards

“Take-Home” Lead

Lead and Children

Lead and Nutrition

LEAD EXPOSURE RISK QUESTIONNAIRE

Child's Name:	DOB:
Health Care Provider's Name:	

Please answer questions 1 through 5. Use a check (✓) to mark the box next to your answer choice.

Questions

Child's Age: _____ Date: _____

1	Is your child enrolled in Medicaid?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
2	Does your child receive WIC or Head Start benefits?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
3	Does your child live in or regularly visit a house (or child care facility) that was built before 1978?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
4	Does your child live in or regularly visit a house (or child care facility) built before 1978 with recent or ongoing renovations or remodeling (within the last six months)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
5	Does your child have a sibling or playmate that has or did have lead poisoning?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know

A "Yes" response to *any* of the questions indicates the child should be tested. A "don't know" response to questions 3 and 4 indicates the child should be tested.

For office use only: Based on responses, is a blood lead test indicated? Yes No

HEALTHY HOMES & LEAD POISONING PREVENTION PROGRAM



1-800-897-LEAD

DECLARATION OF ELEVATED TEST RESULT FORM

To: Nurse Case Manager
NH Department of Health and Human Services
Healthy Homes & Lead Poisoning Prevention
Program

FAX: (603) 271-3991

Phone: (603) 271-4718

I am aware of the requirement in New Hampshire's Lead Poisoning Prevention and Control Act that one of the following conditions must be met in order for the Department of Health and Human Services (DHHS) to proceed with an environmental investigation for a child with a venous blood lead of 10 $\mu\text{g}/\text{dL}$ or greater:

1. The child must have a second venous blood lead level drawn; OR
2. The child's health care provider may declare the initial venous blood lead test of 10 $\mu\text{g}/\text{dL}$ or greater to be elevated.

Name of child _____ DOB _____

had a venous blood lead level of _____ $\mu\text{g}/\text{dL}$ on _____ date

PLEASE CHECK ONE BOX.

The option I wish to use for this child is:

I will make arrangements to have a second venous blood lead test drawn **PRIOR TO** having an environmental investigation conducted by the DHHS.

OR

I declare the above referenced blood lead level to be elevated in order that an environmental investigation may be conducted by the DHHS.

Signature

Date

Telephone

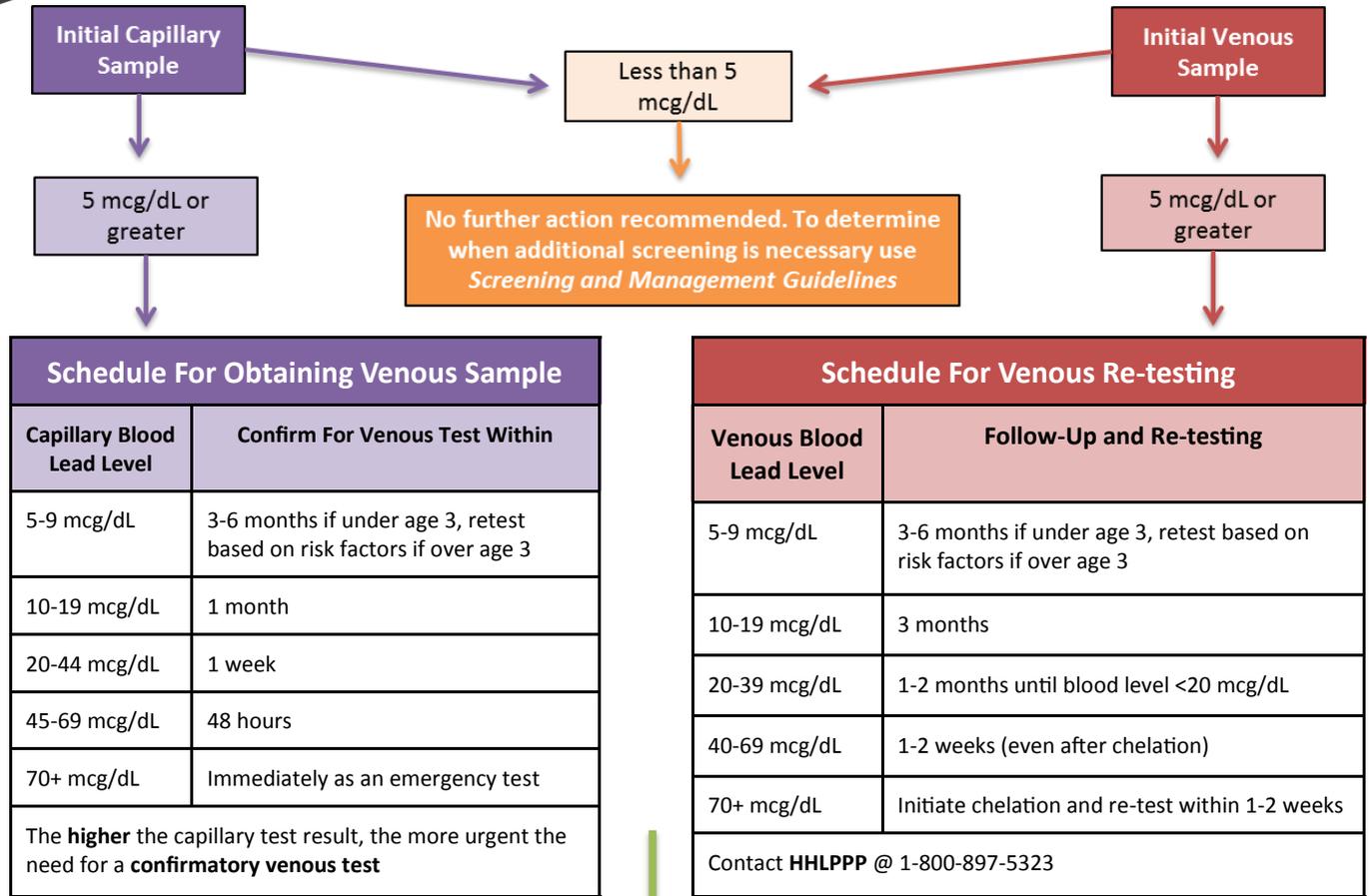
Healthy Homes & Lead Poisoning Prevention Program

State of New Hampshire, Department of Health and Human Services
29 Hazen Drive, Concord, NH 03301 ☎ 603-271-4507 🌐 www.dhhs.nh.gov/dhhs/clppp

LEAD POISONING

MEDICAL MANAGEMENT

Provider Quick Guide for Lead Testing and Treatment



Clinical Treatment Guidelines for Venous Confirmed Blood Lead Levels			
5-9 mcg/dL	10-44 mcg/dL	45-69 mcg/dL	70+ mcg/dL
<ul style="list-style-type: none"> Provide factsheets to parents (<i>Lead and Children, Lead and Nutrition</i>) Follow-up BLL monitoring Test siblings for EBLL 	<p>Continue management, AND:</p> <ul style="list-style-type: none"> Rule out iron deficiency & prescribe iron if needed Neurodevelopmental monitoring & consider referral for evaluation HHLPPP provides nurse case management & environmental lead investigation patients with BLL of 25-44 need aggressive environmental intervention Succimer is NOT recommended to treat BLL 25-44 as there is no cognitive benefit 	<ul style="list-style-type: none"> Confirm BLL within 2 days Stop iron therapy prior to chelation Begin chelation in consultation with clinician experienced in lead toxicity therapy Consider directly observed therapy with succimer For chelation guidance contact PEHSU at Children's Hospital @ 1-888-214-5314 and/ or follow AAP Treatment Guidelines Ensure child is discharged to a lead free environment 	<p>EMERGENCY!</p> <ul style="list-style-type: none"> Confirm BLL immediately Hospitalize even if asymptomatic Begin medical treatment immediately in consultation with clinicians experienced in lead toxicity therapy Continue management as noted for 45-69 mcg/dL BLLs

Adapted From Vermont Department of Health

MEDICAL MANAGEMENT

Provider Quick Guide for Clinical Evaluation and Management

Screening Criteria for Children*

*Does not apply to children currently or previously lead poisoned

- Test all children at 12 and 24 months
- Test all children 3 to 6 years old who haven't been tested
- For refugee children:
 - * Test all children between 6 months and 16 years old upon entry into the US
 - * Regardless of initial screening result, conduct a follow up on all children 6 months to 6 years old

Indications to Test for Lead

Test any child who demonstrates the following risk factors:

- Developmental delays or learning disabilities
- Behavioral problems such as aggression & attention issues
- Excessive mouthing, pica, or hand to mouth behavior
- Ingestion of any object that may contain lead
- Symptoms or signs of lead poisoning including:
 - * Irritability, headaches, vomiting, or loss of appetite
 - * Seizures or other neurological symptoms
 - * Anemia, abdominal pain, or constipation
- Member of at-risk population:
 - * Living in pre-1978 housing
 - * Medicaid, WIC, Headstart enrollment
 - * Refugee children
 - * Recent immigrant
 - * International adoptees

Lead Exposure Risk Questionnaire			
Questions to Ask Parents	Yes	No	Don't Know
Is your child enrolled in Medicaid?			
Does your child receive WIC or Head Start benefits?			
Does your child live in or regularly visit a house (or child care facility) that was built before 1978?			
Does your child live in or regularly visit a house (or child care facility) built before 1978 with recent or ongoing renovations or remodeling (within the last six months)?			
Does your child have a sibling or playmate that has or did have lead poisoning?			

Temporary Interventions to Limit Exposure

Provide "Lead and Nutrition", "Lead and Children" & "Lead Hazards" factsheets to educate parents and caregivers

- Hand washing
- Clean child's toys, bottles & pacifiers often
- Feed child Calcium, Iron & Vitamin C foods daily
- Have barriers blocking access to lead hazards
- Wet wipe window sills
- Wet mop floors once a week or more
- Use HEPA filter vacuum to clean up dust, paint chips etc.

Developmental Assessment & Intervention for Children with Elevated Blood Lead Levels (EBLL)

For any child with an EBLL, especially if > 20 mcg/dL, or if > 15 mcg/dL with other significant developmental risk factors

- Long term developmental surveillance should be a component of the child's management plan
- Developmental surveillance should continue through the child's early and middle school years even if blood lead level is reduced
- A history of EBLL should be included in the problem list maintained in the child's medical record
- Consider early intervention and stimulation programs. Call New Hampshire Division of Developmental Services for a list of local Family-Centered Early Supports & Services at (603)-271-5143

Developmental Surveillance should include:

- Vigilance for emerging difficulties at critical transition points in childhood (i.e. physical, social, emotional, academic challenges in preschool, 1st, 4th, 6th & 7th grades)
- Vigilance for behaviors such as inattention, distractibility, aggression, irritability & hyperactivity
- Referral of the child experiencing neurodevelopmental problems for a thorough diagnostic evaluation



LEAD AND PREGNANCY

Preventing Lead Poisoning in Pregnant and Breastfeeding Women

Lead Can Harm You and Your Baby

Symptoms of lead poisoning may be similar to those of a normal pregnancy. Take special care to avoid lead during your pregnancy.

- Get early prenatal care and talk to your doctor about your supplements and home remedies
- Stay away from peeling paint and repair work
- Eat foods high in Calcium, Iron, and Vitamin C
- Ask your doctor about getting more Calcium in your diet
- Wash your hands often
- Have someone wet mop and clean surfaces in your home that contain dust
- Don't use products and dishes containing lead
- Be extra careful with jobs or hobbies that involve working with lead
- If you eat or mouth non-food items, they could have lead in them (e.g., paint chips, metal charms). Discuss this behavior with your doctor

YOUR BABY AND LEAD

Lead can be passed to babies during pregnancy

A woman can breathe in or swallow lead before or during her pregnancy. Lead can be stored in a person's bones for years. When a woman is pregnant and/or breastfeeding, lead in her body can be passed to her baby.

LEAD IN YOUR ENVIRONMENT

Be aware of lead hazards at home and work



- Homes built before 1978 may have lead paint
- Renovations can produce lead dust
- Jobs and hobbies like stained glass, painting, and fishing can expose you to lead
- Imported cosmetics, candy, jewelry, medallions, and charms may contain lead
- Home and natural remedies, like Azarcon, Bala Goli, Pay-loo-ah, and Ba-baw-san, may also contain lead

PROTECT YOURSELF AND YOUR BABY

Avoid lead when pregnant and breastfeeding

Lead in the blood causes health problems in mothers and babies.

- Ask your doctor for a test if you have been exposed to lead
- Lead can cause high blood pressure in pregnant women
- Women exposed to lead may experience miscarriage
- Babies are at risk of being born premature or with a low birth weight
- Children exposed to lead in the womb are at risk for lower IQ and learning problems
- If you have an elevated blood lead level, talk to your doctor about breastfeeding
- Use cold tap water to make infant formula
- Get your baby lead tested at 1 and 2 years old



LEAD POISONING

New Hampshire
HEALTHY HOMES
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LEAD IN THE ENVIRONMENT

Lead in Soil

Ways to Reduce Lead in Soil

Focus on these risk areas when looking for lead in your soil.

Play Areas

- Keep play areas away from structures with lead paint
- Cover bare dirt and play areas with ground cover
- Provide a clean sandbox for children

Vegetable Gardens

- Replace top 10" of soil with clean soil
- Keep soil moist to limit dust
- Scrub any vegetables grown in the garden before eating
- Keep soil from becoming too acidic
- Wear gloves when working in soil

Drip Zone

- A drip zone is the 3-foot area that surrounds the house
- A drip zone usually has the highest levels of lead because of exterior paint chipping and falling
- Remove the top 10" of drip zone soil
- Plant shrubs right around the house to keep kids out of the drip zone
- Fence up the area or cover with landscape fabric and mulch

Walkways

- Lead contaminated dirt from walkways can be brought into the home
- Cover dirt walkways with gravel, stone, brick, or concrete

LEAD IN SOIL IS A PROBLEM

The only way to know if there is lead in your soil is to get it tested

Most people think of old paint when they hear about lead poisoning, but lead in soil can also be harmful to children. Lead in soil comes from flaking paint, years of factory pollution, and leaded gasoline in cars. Lead arsenate was also used as a pesticide in orchards. When lead gets in soil, it does not wash away or dissolve. It lasts forever.

RISKS FOR YOU AND YOUR FAMILY

You can be exposed to lead in soil in many ways



- Children often play in soil and mud, and may put leaded dirt in their mouths, hands, and faces
- People bring in lead from outside on their shoes
- Pets can bring home leaded dirt on their fur and paws

PROTECTING YOUR FAMILY

Lead in soil is dangerous and can enter your home

- Choose plants, shrubs, and ground cover that will keep children away from bare soil
- Place a rug at each entry door to stop dirt from tracking in
- Take shoes off at the door
- Wash hands and fingernails after playing outside
- Wash yard toys before bringing them inside, or just leave the yard toys outside
- Wipe pets off when they come inside
- Park cars on a paved area or in one place, as parking cars in the yard stops grass from growing, which creates dirt and dust



LEAD IN THE ENVIRONMENT

Lead in Water



Limit the Risk

Lead is rarely found in the public drinking water supply, and is mostly likely entering your water because of pipes and plumbing in your home.

- Use only cold water for cooking and drinking
- Never use hot water from the tap for cooking baby formula
- Never boil water to remove lead. Boiling water may cause the lead to become more concentrated
- Use filtered or bottled water if necessary
- If you use a water filter, make sure it is certified to remove lead by the NSF International
- Replace home plumbing parts containing lead
- Make sure repairs to pipes do not use lead solder
- Make it a habit to run the water at each tap before use
- Keep children from drinking water out of hoses, as vinyl in hoses may contain lead

SOURCES OF LEAD IN WATER

Lead can enter your water through pipes

Lead pipes were commonly used until the 1940s. Lead solder was used in pipes until 1986 and is still found in the pipes of many older homes. In an old home with lead pipes and solder, this lead can get into your water and be ingested by you and your family.

TESTING

You can not see, smell, or taste lead in your water

The only way to know if lead is in your water is to have it tested. If you want to test your home's water supply for lead, contact the NH Dept of Environmental Services Lab at (603)-271-3445. Lead can enter water through home sources such as:



- Wearing down of pipes, faucets, fittings and solder
- Brass and chrome-plated faucets
- Old claw foot tubs

If your test is positive for lead, make sure to remove potential sources of lead contamination immediately.

WHAT YOU CAN DO

Flush your pipes

- When water is not used for 6-8 hours, it can absorb lead from the water tank and pipes
- Make sure to let cold water run for at least 30 seconds to 1 minute before using water that has sat for a long time
- For hot water, let water run another 45 seconds after the water has heated up

Use a filtration system

- Filter drinking water using a faucet or pitcher filter
- Sediment filters do not remove lead



LEAD POISONING



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LEAD HAZARDS

Looking for Lead Paint Hazards in Your Home

Lead Paint Hazards

Simple steps can help reduce the lead hazards in your home. Create a barrier between lead hazards and your family.

Lead painted windows are especially dangerous and accessible to children.

- Cover deteriorated window paint with duct tape or contact paper
- Keep the lower part of the window closed and only open the top part

Opening and closing doors can produce lead dust and paint chips.

- Put felt bumpers on door edges to prevent banging
- Cover edges of door with duct tape
- Remove doors entirely where possible

Baseboards are constantly bumped into and easily reached by children.

- Block access to chipped areas with large furniture
- Cover chips and cracks with duct tape or contact paper

Walking causes paint to wear off floors and stairs and can produce lead dust.

- Cover floors with area rugs
- Install a runner on stairs to reduce lead dust

People can bring lead dust in from outside on their shoes.

- Remove shoes when coming inside
- Put a shoe mat outside to avoid tracking in lead dirt

OLDER HOMES

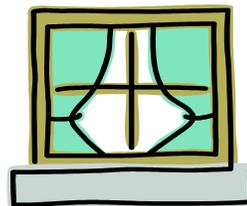
Homes built before 1978 may contain lead paint

Lead paint was banned from residential use in 1978. Not all paint is a lead exposure hazard. The condition or location of lead paint is what puts a child at risk for lead poisoning.

LOOK OUT FOR LEAD

Looking for lead paint in your home

Lead paint was inexpensive, durable, and used mostly on:



- Woodwork and trim
- Walls in bathrooms and kitchens
- Doors, windows, and baseboards
- Floors and stairs
- Exteriors and porches

MAINTENANCE

Keeping paint in good condition

Follow these guidelines to prevent lead hazards in your home:

- Touch up chipping paint in your home
- Avoid paint removal that makes lead dust
- Watch out for moisture, which causes paint to deteriorate
- Follow EPA guidelines when doing work on your home
- Look into using certified lead abatement contractors for high risk lead hazards

LEAD SAFE CLEANING

Proper clean up can reduce lead dust in your home

- Wear gloves when working with lead
- Use a spray bottle with all-purpose cleaner and wet wipes
- Use disposable paper towels—sponges will only spread dust
- Only use a HEPA vacuum, not a regular vacuum or broom, to clean up lead paint
- Rugs, carpets, and upholstery need to be steam cleaned



LEAD POISONING

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LEAD HAZARDS

Other Possible Sources of Lead

Though the dangers of lead have been known for years, many common items still contain lead. Here are some sources of lead that may exist in your home.

Home Environment

- Soil near lead industries, roads, and lead-painted houses
- Plumbing and solder
- Vinyl miniblinds
- Ceramic floor or wall tiles for kitchens and bathrooms
- Building materials like gutters, flashing, and window glazing
- Old fashioned claw-foot bathtubs
- Leaded glass, crystal, and pewter
- Lead arsenate pesticide
- Plastic insulation on electrical wiring

Mexican/ Central American Home Remedies

- Azarcon is a bright orange powder used for treating stomach aches. Other names for Azarcon are Rueda, Corol, Alarcon, Maria Luisa, and Ligo.
- Greta is a yellow powder used for stomach aches.

Asian Indian/Middle Eastern Home Remedies

- Ghasard is a brown powder used for stomach aches.
- Bala Goli is a round black bean dissolved in "gripe water" and used for stomach aches.
- Kandu is a red powder used for stomach aches.
- Kohl is a powder used for eye make-up and teething.

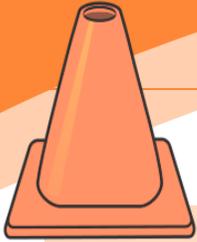
Products

- Imported candy and candy wrappers
- Supplements
- Imported cosmetics and hair dye
- Imported crayons
- Some rechargeable batteries
- Metal-cored candle wicks

Asian Home Remedies

- Pay-Loo-Ah is a Vietnamese red powder used for rashes.
- Ba-Baw-San is a Chinese herbal medicine used to treat colic.





“TAKE-HOME” LEAD

Lead Can Be Carried Home from Work on Clothes, Shoes, and Vehicles

Your Family & “Take-Home” Lead

Lead can cause health problems in adults and children. Pregnant and breastfeeding women and younger children are at special risk and should be tested. Symptoms can vary by population and may include:

All Adults

- Tiredness and headache
- Muscle and joint pain
- Changes in appetite and mood
- Damage to brain, nerves, and kidneys
- Fertility issues in men & women
- Reduced sex drive

Pregnant Women

- Miscarriages
- Premature delivery
- Low birth weight babies
- Permanent damage to fetus

Breastfeeding Women

- May have contaminated milk, which can expose child to lead

Children

- Permanent health damage to brain, nerves, and kidneys
- Long-term learning challenges
- Trouble with memory and behavior

WHAT IS “TAKE-HOME” LEAD

Lead dust can be brought home from work

Take-home lead occurs when lead dust produced at work is brought home on clothes, shoes, and personal belongings. It can be carried into your car and onto furniture, floors, carpets, and other belongings. Because of this, your family can be exposed to lead even if there are no lead hazards in the home.

REDUCING “TAKE-HOME” LEAD

Remove lead dust from clothes, shoes, and personal items



If you work with lead, take these precautions:

- Change into clean clothes and shoes before getting into your car
- Put dirty work clothes and shoes in a plastic bag
- Wash hands and face before leaving work
- Wash work clothes separately and run an empty load before washing other clothes

LEAD-SAFE WORK PRACTICES

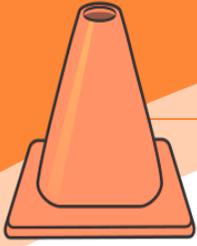
Protect yourself from lead at work

- Don't eat, drink, smoke, or change clothes in work areas
- Keep facial hair and nails clean and dust-free
- Wash under jewelry, like rings and bracelets
- Avoid sweeping or blowing dust that has lead
- Use a wet-mop cleaning system and disposable wipes
- Wear protective equipment like a respirator
- If you have used your cellphone at work, don't let anyone at home play with it
- Disposable protection like coveralls can reduce clothing contamination



LEAD POISONING

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“TAKE-HOME” LEAD

Jobs and Hobbies May Expose Adults to Lead

Though the dangers of lead have been known for years, many common items still contain lead. Some jobs and hobbies put people at a high risk of being exposed to lead. Know if your hobby or job exposes you to lead and be sure to take the necessary precautions.

Construction

- Painting or paint removal
- Remodeling and renovations
- Plumbing, glazing, and brick laying
- Lead burning
- Construction and repair of bridges, water towers, and tanks
- Welding or cutting materials with lead alloys

Hobbies

- Home remodeling
- Melting lead for fishing weights, bullets, or toys
- Target shooting
- Using lead glazes in ceramics
- Backyard scrap metal recycling, and radiator repair
- Stained glass making
- Burning painted wood

Manufacturing

- Lead acid batteries
- Cable, wire products, solder
- Firearms, bullets, explosives
- Rubber or plastics

Repair

- Automotive work
- Ship repair
- Welding, cutting, and sanding
- Grinding of lead alloys or lead-coated surfaces
- Soldering and electronics repair
- Repair work that disturbs lead paint

Metal Working

- Foundry work, casting, forging
- Grinding
- Circuit board manufacturing and recycling

Other sources

- Cleanup at firing ranges
- Using lead-containing paints, inks, pigments, and glazes
- Working at municipal solid waste incinerators



LEAD POISONING

New Hampshire
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LEAD AND CHILDREN

Children are at a Special Risk for Lead Poisoning

Is My Child at Risk for Lead Poisoning?

The only way to know if your child is poisoned is to get a blood lead test. Many factors can put your child at risk for lead exposure, including:

- Living in a home built before 1978 with ongoing repair or remodeling
- Attending a daycare built before 1978 with deteriorating paint or ongoing repairs
- Spending time with a sibling, relative, or playmate with lead poisoning
- Spending time with an adult who works with lead in a job or hobby (e.g., fishing, painting, auto repair)
- Eating or drinking food or beverages stored in glazed pottery or leaded crystal
- Using traditional home remedies and imported products (e.g., Kohl, Azarcon, Alarcon, Greta, Pay-loo-ah)
- Swallowing or mouthing small metal charms, trinkets, and jewelry
- Playing in contaminated soil

SYMPTOMS OF LEAD POISONING

Most children with lead poisoning DO NOT look sick

The only way to know if your child has lead poisoning is to get tested. Some children might experience:

- Stomach ache
- Headache
- Trouble paying attention
- Trouble eating or sleeping
- Irritability

LONG-TERM EFFECTS

Lead can affect all parts of the body and mind



- Lower IQ
- Hearing and speech problems
- Slowed growth and development
- Hyperactivity and attention problems
- Damage to the brain, kidneys, and nerves

PROTECTING YOUR CHILD

Remove the lead source and look out for lead hazards

Lead poisoning occurs when children ingest lead

- Keep your house clean and dust free
- Keep children away from lead paint and dust
- Have your home tested for lead
- Look out for contaminated soil or water
- Avoid imported foods and candies
- Be careful with small metal charms, trinkets, and jewelry
- Don't use recalled products & toys

Provide early intervention & stimulation

Engaging children in activities may stimulate learning

- Enroll children in reading programs, play groups, classes, and learning activities
- Read to and play games with your child



NH Department of Health & Human Services, Division of Public Health Services

1-800-897-LEAD

LEAD POISONING

New Hampshire
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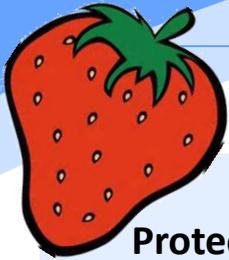
LEAD AND CHILDREN

What Do Blood Lead Levels Mean for Your Child's Health

Any amount of lead is dangerous and can cause health and behavioral problems at all ages. A blood test is the only way to tell if your child has lead poisoning. A capillary finger stick is quick and can be done in the doctor's office, but is not as sensitive as the venous arm test. **Confirm a capillary blood lead test with a venous test.**

Blood Lead Level (micrograms/deciliter)	Capillary or Venous	When to Retest	What can I do to help?
<5	C	Retest annually from the time they crawl to 6 years based on risk	<ul style="list-style-type: none"> Talk to your child's doctor Feed child foods high in Calcium, Iron, and Vitamin C Wash hands frequently Clean floor and window sills with disposable wipes or wet mop Look out for "Take-Home" lead and other lead sources
	V		
5-9	C	Retest in 3-6 months if under 3 years; otherwise retest based on risk	Continue with above AND <ul style="list-style-type: none"> Control known lead hazards Keep up good nutrition (Calcium, Iron, and Vitamin C) Consider testing other children in the home
	V		
10-19	C	Confirm within 1 month	Continue with above AND <ul style="list-style-type: none"> Test siblings younger than 6 years old Ensure child has proper diet Follow up by NH HHLPPP will provide education, case management, and environmental assessment Consider developmental evaluation if elevated blood lead levels persist
	V	Retest within 3 months if under 3 years; otherwise retest based on risk	
20-44	C	Confirm within 1 week	Continue with above AND <ul style="list-style-type: none"> Remove child from lead hazards
	V	Retest every 1-2 months until <20 mcg/dL	
45 -69	C	Confirm within 48 hours	Continue with above AND <ul style="list-style-type: none"> Child needs immediate treatment and may need hospitalization Chelation may be necessary Ensure child returns to a lead safe environment
	V	Seek immediate medical attention and test weekly afterwards	
≥70	C	Confirm IMMEDIATELY	Continue with above AND <ul style="list-style-type: none"> TAKE CHILD TO HOSPITAL FOR TREATMENT!
	V	Medical emergency, chelation treatment	





Protecting Your Child

Good nutrition and hygiene can help reduce the amount of lead a child absorbs in their body.

Prevent lead from mixing with food.

- Wash hands after play and before meals, snacks, and naps
- Don't eat food off the floor
- Eat meals and snacks at the table
- Avoid using dishes that contain lead (e.g., glazed pottery)
- Use cold water for cooking, drinking, and making formula

Give your children healthy snacks.

- Fresh fruits and veggies
- Whole grain crackers
- Cheese slices
- Yogurt

Feed your children 4-6 small meals daily.

- Children absorb less lead on a full stomach

Bake or broil foods, don't fry.

- Avoid high fat foods, which make the body absorb more lead

Wash toys and play spaces often.

- Clean child's toys, bottles, and pacifiers often
- Keep child's play areas free of dust and dirt

LEAD AND NUTRITION

Feed Your Child Foods That Get Ahead of Lead

CALCIUM

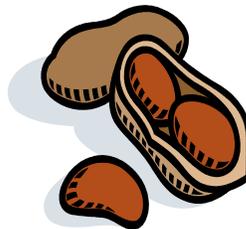
Protects against storing lead in the bones



- Milk and yogurt
- Cheese and tofu
- Juice with added calcium
- Leafy green veggies (kale, broccoli and spinach)
- Food made with milk (hot cereal and pudding)
- Ice cream
- Cottage cheese

IRON

Iron deficiency is associated with lead poisoned children



- Lean meats
- Iron fortified cereals (Cheerios and Kix)
- Fish* (tuna, clams, oysters, and sardines)
- Dried fruits (raisins and apricots)
- Bread and pasta
- Peanut butter and nuts
- Beans
- Molasses
- Leafy green veggies
- Eggs

VITAMIN C

Helps the body take in Iron

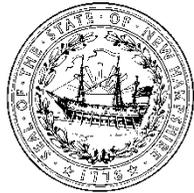


- Oranges and grapefruit
- Melons and berries
- Tomatoes
- Cauliflower and broccoli
- Green peppers and sweet potatoes
- Juices (orange, grapefruit, and tomato)

*Mercury in fish can damage a growing brain. Children under 7 can safely eat 1/2 can of tuna or 1 can of light tuna per week.

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New Hampshire Department of Health and Human Services

Division of Public Health Services

Bureau of Public Health Protection

Healthy Homes and Environments Section

Healthy Homes & Lead Poisoning Prevention Program