DEPARTMENT OF HEALTH

Minnesota Childhood Blood Lead Screening Guidelines: Reference Manual

2025 UPDATE

Minnesota Childhood Blood Lead Screening Guidelines

Guidelines Developed 2000
Revisions: 2011, 2022, 2025

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Executive Summary

Although the toxicity of lead has been known for thousands of years, lead remains one of the most common environmental health threats to children. There are many sources of lead, such as soil contaminated from years of leaded gasoline use, lead dust accidentally brought home from parents' or guardians' workplaces and hobby areas, lead in plumbing, and some imported products and traditional remedies. However, deteriorated lead paint in homes is the main source of lead exposure for U.S. children today. Children with elevated levels of blood lead during the first years of life may not show symptoms until they enter school and display learning difficulties, reduction in IQ, or behavior problems.

Childhood lead exposure has decreased dramatically since the 1970s due to policy changes and the efforts of parents, guardians, and professionals across many disciplines. However, lead persists as an environmental contaminant. In Minnesota, 575 children under 6 years of age had confirmed elevated blood lead levels (EBLLs) in 2023; 143 more children had elevated capillary results without follow-up venous results.

These guidelines represent a set of best practices and recommendations for health care providers, local public health, and other individuals or organizations who are determining which children to test for lead. They are based on national recommendations and input from a multi-disciplinary workgroup. These guidelines may be adapted for use within a specific clinic system, depending on resources available.

The 2022 revision of these guidelines were based on national recommendations, research, and input from a multi-disciplinary workgroup. Prior to 2022, past versions of these guidelines have recommended targeted blood lead screening. Targeted blood lead screening indicates which children should be tested for lead based on identified risk factors. This current version of the Childhood Blood Lead Screening Guidelines recommends universal blood lead screening of all children in Minnesota at 12 and 24 months of age, and targeted blood lead screening for children ages three through seventeen years. This recommendation to test all children at 12 and 24 months of age is a major shift from past guidelines and is based on available research and recommendations from a multi-disciplinary workgroup. The guidelines were also edited in 2022 to improve clarity and provide health care providers with specific resources to which they can refer families.

These guidelines were further updated in 2025 to align with changes to Minnesota Statue and MN Childhood Blood Lead Treatment and Case Management Guidelines updates. In 2023, the definition of an elevated blood lead level was lowered to 3.5 µg/dL and above in the Minnesota Statutes 144.9501-144.9512 (also known as The Minnesota Lead Poisoning Prevention Act) (https://www.health.state.mn.us/communities/environment/lead/rules/index.html#statute). A child is also defined as anyone less than 18 years of age in this MN Statue; before 2021 a child was defined as anyone less than 6 years of age for blood lead case management and follow-up. These guidelines are now consistent with the lowered elevated blood lead level definition, other MN statute changes, and other blood lead guidelines.

Purpose of Screening Guidelines

The Childhood Blood Lead Screening Guidelines are for the identification of children who should have a blood lead test. These guidelines represent a set of best practices and recommendations for health care providers, local public health, and others working with children who may be exposed to lead. Other guidelines regarding blood lead treatment and case management for children, and screening and treatment for pregnant and breastfeeding women, may be found at the Minnesota Department of Health (MDH) Blood Lead Level Guidelines (https://www.health.state.mn.us/communities/environment/lead/prof/guidelines.html).

Blood Lead Tests

Types of Blood Lead Tests

Levels of lead in the body are determined through a blood lead test. Blood lead test results are in micrograms of lead per deciliter of blood (µg/dL or mcg/dL). Blood lead tests can be done with either capillary or venous samples.

Blood lead tests on capillary samples are often used for screening. The blood is drawn from a finger or a heel prick for analysis. Often blood lead tests on capillary samples are more acceptable to parents and guardians, as they are less invasive than venous blood draws. Blood lead tests in capillary samples also may be able to be performed in settings that that do not have the capacity for blood lead draws and may be able to be analyzed during the appointment rather than having to wait for results to come back from a lab.

Blood lead tests on capillary samples are a useful tool for screening, but they are prone to false positive results and thus are considered unconfirmed results. A study by Wang et al.[1] found that about 60% of elevated capillary tests are false positives. Due to the high false positive rate of capillary samples, Minnesota state statute requires an environmental risk assessment for children with a confirmatory blood lead test result on a venous sample ≥ 5.0 µg/dL, but not for children with only unconfirmed capillary results. Therefore, it is important to confirm elevated capillary results with blood lead tests on venous samples. EBLLs on capillary samples should be confirmed with a venous sample according to the timelines on page 17 in Follow-up Blood Lead Testing; the sooner elevated capillary results can be confirmed, the better.

Blood lead tests on venous samples are drawn with a needle from a vein and are considered confirmed results. They are highly accurate and usually used for confirming elevated capillary results or for doing follow-up blood lead tests once an individual has a confirmed EBLL. However, blood lead tests on venous samples may also be used as initial blood lead tests. In some cases, it might make sense to do a blood lead test on a venous sample right away instead of a capillary: when a blood draw is already being done for another reason, when it might be difficult to get a patient back into a clinic for a venous follow-up, or when a patient is suspected

[1] Wang A, Rezania Z, Haugen KMB, Baertlein L, Yendell SJ. Screening for elevated blood lead levels: False-positive rates of tests on capillary samples, Minnesota, 2011-2017. *JPHMP.* 2019;25(1): S44-S50. doi:10.1097/PHH.0000000000879

of already having an EBLL (like when a household member has already had an EBLL). For more information about when a blood lead test on a capillary versus a venous sample is recommended, see below table.

Circumstances for determining whether a Blood Lead Test on a Capillary or Venous Sample is More Appropriate

A capillary sample is more appropriate when:	A venous sample is more appropriate when:
▪ A routine screening test is being done, especially when lead exposure is less likely ▪ A blood lead test is being performed in settings that that do not have the capacity for venous draw ▪ Parents and guardians and/or patients prefer to minimize the need for venous draws ▪ It can be analyzed during the appointment rather than having to wait for results to come back from a lab	▪ A blood lead test is being done to confirm an elevated blood lead test result on a capillary sample ▪ Recurring follow-up blood lead tests are being done once an individual has a confirmed elevated blood lead level (EBLL) $\geq$ 3.5 µg/dL ▪ A blood draw is already being done for another reason ▪ It might be difficult to get a patient back into a clinic for a confirmatory test if the screening test comes back elevated ▪ A patient is suspected of already having an EBLL (for example: when a household member has an EBLL)

Procedures for Taking Blood Lead Tests

It is important to use correct procedures when taking capillary or venous samples for blood lead tests to ensure accuracy and reduce possible lead contamination. Proper procedures reduce lead contamination through steps including wearing gloves and washing a patient's hands with soap and water. The U.S. Centers for Disease Control and Prevention (CDC) has produced several resources about appropriate protocol for taking blood lead samples:

- Webpage: Testing for Lead Poisoning in Children (https://www.cdc.gov/lead-prevention/testing/index.html)
- YouTube Video: Mission Unleaded: How to test children for lead with maximum accuracy (https://www.youtube.com/watch?v=e1VL1p9Yaas)
- Poster: Steps for Collecting Fingerstick Blood Samples in Micro-Vials for Lead Testing (https:/www.cdc.gov/biomonitoring/pdf/Lead-Fingerstick-Poster-508.pdf).
  - The contents of this poster have been copied below for your convenience.

"Steps for Collecting Fingerstick Blood Samples in Micro-Vials for Lead Testing"

1. "Place all collection materials on top of disposable pad. Open the lancet, alcohol swabs, gauze, bandage, and other items. Have all items ready for blood collection.

2. Wash the patient's hands thoroughly with soap and water. Allow them to air dry without touching any surface. Do not use paper towels to dry the patient's hands. Put on your powder free gloves.
3. Massage the patient's hand and lower part of the finger to increase blood flow. Turn the hand down.
4. Scrub the patient's middle finger or ring finger with an alcohol swab.
5. Hold the finger in a downward position and lance the palm side surface of the finger.
6. Apply slight pressure to start blood flow. Blot the first drop of blood on a gauze pad without touching the finger and discard the gauze in appropriate container.
7. Keep the finger in a downward position to maintain blood flow. Hold the micro-collection tube at an angle of 10 degrees below the collection site and touch the tapered end of the tube into the droplet of blood. Do not touch the skin with the tube. Fill the micro-collection vial with the appropriate amount of blood as defined by the micro-collection container that you are using.
8. Once you have collected enough blood, apply a slight pressure to the finger to stop the bleeding. Apply a sterile adhesive bandage over the puncture site.
9. Seal the specimen container and, inverting it immediately, gently invert container 7-10 times to prevent clots from forming.
10. Place the label on the vial. If the label contains a barcode, the barcode needs to be vertical like a ladder when placed on the vial. If the barcode is not vertical, the laboratory will not be able to read the label. Properly discard all used materials. Contact the laboratory for storage and transport guidance."

In addition to the steps above, ensuring a child's hands are warm will improve blood flow. Much of the information in steps 1 and 2 above also apply to taking venous samples. Have all items ready for blood collection and put on powder free gloves. Draw and fill the lead tube first if drawing for multiple tubes with venous samples.

Reporting Blood Lead Test Results

According to Minnesota Statutes 144.9502, Subdivisions 3–4 (https://www.revisor.mn.gov/statutes/cite/144.9502), all blood lead test results must be reported to MDH by the hospital, medical clinic, medical laboratory, other facility, or individual performing blood lead analysis. For these guidelines, a facility performing blood lead analysis will be referred to as a performing facility. Subdivision 7 also states that facilities can report the information required under this section without liability. Elevated blood lead results must be reported to MDH within two business days, and non-elevated blood lead results must be reported to MDH no later than one month.

Health care providers do not need to call the Minnesota Department of Health to report elevated blood lead levels or individual blood lead test results. Ensure your lab is aware of the requirement to report all blood lead tests to the Minnesota Department of Health. If your clinic uses a point-of-care blood lead test, confirm you have protocol in place to ensure that all blood lead test results are reported to the Minnesota Department of Health. If you are concerned that blood lead results have not been appropriately reported to the Minnesota Department of Health by your performing facility, you may call 651-201-4919. The facility performing the blood lead test is responsible for reporting the blood lead test result to MDH. Data must be

submitted by telephone, fax, or electronic transmission "as prescribed by the commissioner." Information about reporting blood lead tests to the Minnesota Department of Health, including reporting through electronic submission, can be found at Reporting Blood Lead Test Results (https://www.health.state.mn.us/communities/environment/lead/reporting.html).

All blood lead test results must include:

- Whether the specimen was collected as a capillary or venous sample
- The date the sample was collected
- The results of the blood lead analysis
- The date the sample was analyzed
- The method of analysis used
- The full name, address, and phone number of the laboratory performing the analysis
- The full name, address, and phone number of the physician or facility requesting the analysis
- The full name, address, phone number, birthdate, gender, race, and ethnicity of the person who received the blood lead test, and their guardian's name if available

Blood Lead Reference Value

In 2021, the U.S. Centers for Disease Control and Prevention (CDC) announced that they updated their blood lead reference value (BLRV) from 5.0 µg/dL to 3.5 µg/dL, in response to a 2021 recommendation from the Lead Exposure Prevention and Advisory Committee (LEPAC). The BLRV is based on the 97.5th percentile of the blood lead level (BLL) distribution in U.S. children ages 1–5 years. It is not based on evidence of a direct benefit or harm to individual children. For more information, please see the CDC Abut the Data: Blood Lead Surveillance (https://www.cdc.gov/lead-prevention/php/data/blood-lead-surveillance.html) website.

In 2023, the definition of an elevated blood lead level was lowered to 3.5 µg/dL and above in Minnesota Statutes 144.9501-144.9512 (also known as The Minnesota Lead Poisoning Prevention Act) (https://www.health.state.mn.us/communities/environment/lead/rules/index.html#statute). In 2025, the Minnesota Childhood Blood Lead Treatment and Case Management Guidelines were updated to reflect this definition of an elevated blood lead level of 3.5 µg/dL.

Targeted versus Universal Screening

Prior to 2022, these guidelines recommended targeted blood lead screening. Targeted blood lead screening indicates which children should be tested for lead based on identified risk factors. This current version of the Childhood Blood Lead Screening Guidelines recommends universal blood lead screening of all children in Minnesota at 12 and 24 months of age, and targeted blood lead screening for children 3–17 years of age. This recommendation to test all children at 12 and 24 months of age is a major shift from past guidelines and is based on available research and recommendations from a multi-disciplinary workgroup.

Lead poisoning prevention policies, such as the Lead-Based Paint Poisoning Prevention Act and the Lead Contamination Control Act, have resulted in decreases in lead hazards and EBLLs in children overtime. However, many lead hazards in housing and in the environment remain. In Minnesota, about 21% of housing was built prior to 1950, while about 55% was built prior to

1980. Forty-eight of the 87 Minnesota counties (55%) have over 25% of their housing stock built before 1950, and all 87 Minnesota counties (100%) have over 25% of their housing built before 1980.[2]

Products produced or contaminated with lead are also unfortunately common in our environment. Non-housing sources of lead may include workplaces, hobbies, antiques, toys, keys, traditional medicines and cosmetics, amulets, jewelry, cookware, pottery, and food. Public health professionals also continue to identify new and emerging sources of lead including products purchased online, locally, and abroad. With so many possible sources of lead exposure, there is concern that targeted screening cannot account for all sources of lead, and thus some children with EBLLs may be missed. Universal blood lead screening will ensure that all children in Minnesota receive blood lead tests at 12 and 24 months, no matter their possible sources of lead exposure.

The American Academy of Pediatrics' (AAP) policy statement on the "Prevention of Childhood Lead Toxicity"[3] cited studies that have found that risk screening questionnaires often fail to identity children exposed to lead. This policy statement emphases the importance of preventing and reducing sources of childhood lead exposure, rather than just focusing on identifying children who have already been exposed. Preventing and reducing sources of lead exposure are important as there is no safe level of lead and there is no treatment available for low BLL concentrations. Universal screening of children at 12 and 24 months may help identify sources of lead to be targeted for primary prevention.

In their policy statement, the AAP recommended blood lead testing for asymptomatic children according to federal and state requirements, and blood lead testing for *all* children 12 to 24 months of age living in communities with ≥ 25% of housing built before 1960. As a majority of counties in Minnesota have over 25% of their housing built before 1960, this AAP policy statement would indicate universal blood lead testing for children aged 12 and 24 months in Minnesota is appropriate.

Importance of Blood Lead Testing at Both 12 and 24 Months

Children should receive a blood lead test at *both* 12 and 24 months of age, but oftentimes that does not happen. Often, health care providers or parents and guardians believe that if a child did not have an EBLL at 12 months, they do not need to receive a blood lead test at 24 months of age. Two-year-old children are more mobile and interact with their environments differently than one-year-old children. This can change the risk for lead exposure between these ages, even if the child's house or other risk factors do not change. This is supported by MDH surveillance data: of children with an EBLL at two years of age, 40% were tested and had a non-elevated test at one year of age. If children at 24 months of age do not receive a blood lead test, lead-exposed children may go undetected.

[2] Minnesota Department of Health. Risk factors for childhood lead exposure. Minnesota Department of Health. Updated May, 2022. Accessed August 25, 2022. https://data.web.health.state.mn.us/lead_risk

[3] AAP Council on Environmental Health. Prevention of childhood lead toxicity. *Pediatrics.* 2016;138(1). doi: 10.1542/peds.2016-1493

Among children born in 2018 residing in Minnesota, 70% were tested around one year of age (9 to 18 months), but only 44% were tested around two years of age (18 to 36 months) and only 35% were tested at both one and two years of age. This indicates that many providers are testing children at one year but not two years of age as recommended. Blood lead screening statistics are available at the county scale through the MDH Data Access Portal's Childhood Lead Exposure (https://data.web.health.state.mn.us/web/mndata/lead) page.

Childhood Blood Lead Screening Guidelines for Minnesota

Blood Lead Testing by Age Group

Recommendations for Blood Lead Testing by Age Group

<table>
<tr><th colspan="5">All Children 0–17 Years</th></tr>
<tr><td colspan="5">

Any child that a parent or guardian expresses concern about lead exposure, or asks for their child to be tested for lead poisoning, should receive a blood lead test.
If the health care provider becomes aware of changes in possible lead exposure or risk factors in a child, the child should receive a blood lead test.
Newly arrived refugees should be tested upon arrival and 3–6 months after initial blood lead test. Additional tests may be warranted based on risk questionnaire.
When doing a blood lead test, follow sample collection procedures identified by the CDC Steps for Lead Testing.

For capillary samples, make sure to wash the patient's hands with soap and water before taking a sample.

</td></tr>
<tr><th>Newborns</th><th>9–15 Months</th><th>18–24 Months</th><th>25 Months–5 Years</th><th>6–17 Years</th></tr>
<tr><td>If a parent has a blood lead level (BLL) ≥ 5.0 µg/dL during pregnancy or while breastfeeding, refer to the MDH Blood Lead Level Guidelines for Pregnancy & Breastfeeding.</td><td>All children should receive a blood lead test between 9–15 months of age (recommended at 12 months).</td><td>All children should receive a blood lead test between 18–24 months of age (recommended at 24 months).</td><td>Children should receive a blood lead test if they did not receive a blood lead test ≤ 24 months OR if they meet criteria for a blood lead test based on risk questionnaire (see below).</td><td>Children should receive a blood lead test if they meet criteria for a blood lead test based on risk questionnaire (see below).</td></tr>
<tr><td colspan="5">ALL BLOOD LEAD TESTS ARE REQUIRED TO BE REPORTED TO THE MINNESOTA DEPARTMENT OF HEALTH (MDH) BY THE LAB OR CLINIC ANALYZING THE SAMPLE. HEALTH CARE PROVIDERS DO NOT NEED TO CALL MDH TO REPORT (UNLESS THEY SUSPECT A FAILURE TO REPORT PROPERLY).</td></tr>
</table>

* For blood lead screening for other populations, refer to MDH Blood Lead Level Guidelines (https://www.health.state.mn.us/communities/environment/lead/prof/guidelines.html) for Pregnancy & Breastfeeding.

Risk Screening Questionnaire

Lead Risk Screening Questionnaire for Children 3–17 Years of Age

All children in MN should receive a blood lead test at 12 and 24 months. Refer to blood lead screening guidelines.			
Questions for Children 3–5 Years of Age			
In the following questions, the "child" refers to the person getting screened for a blood lead test. If you are a parent or guardian, answer the following questions for your child.	**Yes**	**Don't Know**	**No**
Did the child miss their blood lead tests at 12 or 24 months?			
Since the child's last blood lead test has the child's sibling, housemate, or playmate been diagnosed with an elevated blood lead level (EBLL) greater than or equal to ≥ 3.5 µg/dL?			
Since the child's last blood lead test has the child moved to or started regularly visiting a home, childcare, or other building built before 1978?			
Has the child moved to Minnesota from a major metropolitan area within the last 12 months?			
Does the child's diet lack sources of iron or calcium?			
Has the child been diagnosed with low hemoglobin, low iron levels, or anemia?			
Questions for Children 3–17 Years of Age			
In the following questions, the "child" refers to the person getting screened for a blood lead test. If you are a parent or guardian, answer the following questions for your child. If you are a teenager filling this out for yourself, answer the questions for yourself.	**Yes**	**Don't Know**	**No**
Do you think the child may have been exposed to lead?			
During the last 12 months, did the child arrive in Minnesota from another country or spend significant time in another country?			
Does the child live in a house built before 1978 that is currently being renovated or has been renovated within the past 12 months?			
Does the child have any bullets in their body from past gunshot wounds?			
Does the child have any developmental disabilities?			
Does the child eat, mouth, or chew on any nonfood items, such as clay, soil, paint chips, painted wood, keys, fishing sinkers, jewelry, or antique furniture or toys?			
Does the child eat venison or other game that was harvested with lead bullets?			

All children in MN should receive a blood lead test at 12 and 24 months. Refer to blood lead screening guidelines.			
Does the child eat candy (like chili or tamarind) or spices (like turmeric, chili, or curry) from other countries, especially spices purchased in bulk?			
Does the child eat food cooked or served in handmade, imported, or terra cotta pottery, cookware, or leaded crystal?			
Does anyone in the household use any traditional or cultural medicines?			
Does anyone in the household use any traditional or cultural cosmetics such as kohl, kajal, surma, sindoor, or thanakha?			
Does anyone in the household have an occupation, hobby, or activity that involves lead exposure? See below list for examples.			
If the answer "Yes" or "Don't Know" to ANY of the above questions, the child should receive a blood lead test. Children should also be tested if they or their parents/guardians have any concerns about lead not addressed here.			

Examples of Lead-Related Hobbies, Occupations, and Industries

- Manufacturing: lead, batteries, bullets, fishing sinkers, ceramics, electrics, cable, wire, industrial, glass, paint, plastic, rubber
- Shooting teams, hunters, firing range users and workers, gunsmiths, police officers, armed forces
- Painters, remodelers, renovators, restorers, and refinishers of old buildings or antiques
- Auto repair, plumbers and pipe fitters, radiator repairers, welders, splicers, shipbuilders
- Recycling: metal, glass, electronics, and batteries, solid waste incinerators
- Artists (Painting, Ceramics, Pottery, Jewelry, Stained Glass, Printmaking)
- Construction and demolition work, lead abatement workers

Follow-Up Blood Lead Testing

Follow-Up Blood Lead Testing
▪ If blood lead test result was < 3.5 µg/dL for either a blood lead test on a capillary or venous sample, no further testing is needed until the next time they are scheduled to receive a blood lead test according to the above screening guidelines, or if their risk factors change.
▪ If blood lead test was done on a capillary sample and the blood lead level (BLL) was elevated (≥ 3.5 µg/dL), confirm with a venous draw as soon as possible and no later than: ▪ *Immediately* for BLLs ≥ 60 µg/dL, ▪ 48 hours for BLLs 45.0–59.9 µg/dL, ▪ 1 week for BLLs 10.0–44.9 µg/dL, ▪ 1 month for BLLs 3.5–9.9 µg/dL. ▪ If a clinic is unable to do a venous draw, refer the child to a laboratory or facility able to perform a venous draw.
▪ If blood lead test was done on a venous sample and the BLL was elevated (≥ 3.5 µg/dL), follow the MDH Blood Lead Level Guidelines for Childhood Blood Lead Treatment.

Collaboration with Public Health

Sharing Information with Public Health

Minnesota Statutes 144.9502, Subdivision 9, (https://www.revisor.mn.gov/statutes/cite/144.9502), along with (Minnesota Statutes 145A.04 Subdivision. 1 (https://www.revisor.mn.gov/statutes/cite/145A.04)), grants local boards of health the authority to enforce the laws identified in these statutes and utilize blood lead data to monitor BLLs, ensure screening services are provided to high-risk populations, ensure the provision of medical and environmental follow-up, and conduct primary prevention. Based on these statutes, health care providers may share information about patients that have received a blood lead test with the relevant local public health department, tribal nation health department, or Community Health Board as well as MDH.

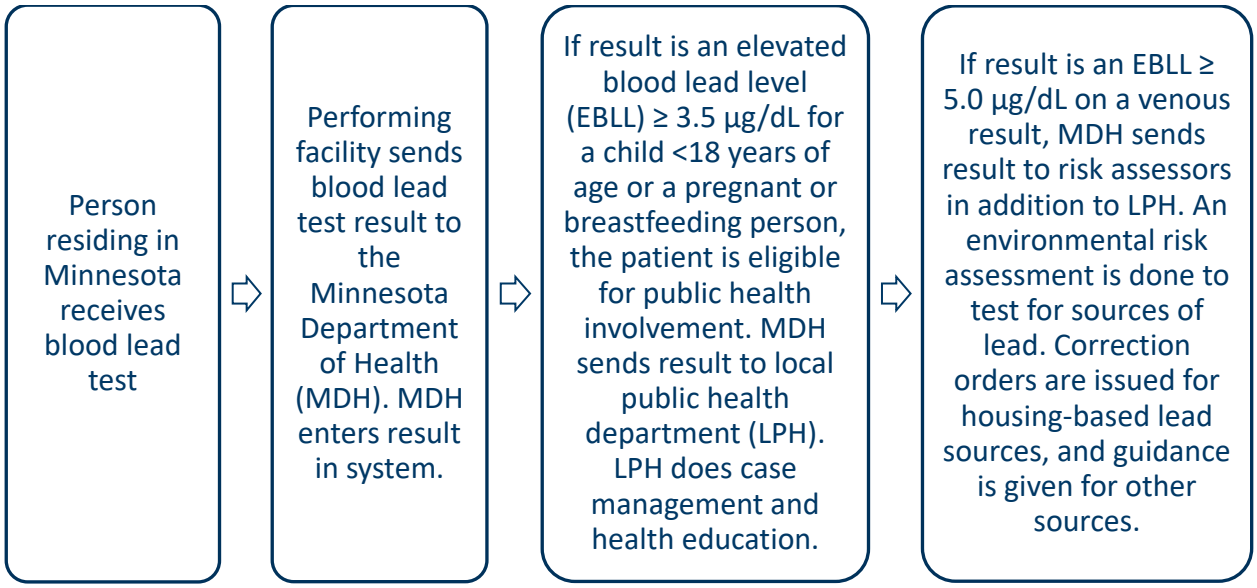
The ability of local public health departments to obtain and utilize blood lead analysis data and the associated epidemiologic data is crucial for fulfilling the responsibilities of an assessing agency under Minnesota Statutes 144.9504 and protecting and promoting the health of Minnesota residents.

Public Health Services

Health care providers do not need to contact the Minnesota Department of Health or local public health departments to request services for children with elevated blood lead levels. Health care providers are welcome to contact the Minnesota Department of Health to check on the status of a case, request to be connected with a local public health agency, or consult on likely sources of lead exposure (see Technical Assistance and Communication section on page 20).

For children, an elevated blood lead level greater than or equal to 3.5 µg/dL will automatically trigger involvement from local public health. For individuals who receive services through a Tribe, services may be provided by Tribal public health rather than local public health. An elevated blood lead level on a venous result greater than or equal to 5.0 µg/dL in a child will also ensure an environmental investigation (risk assessment). Environmental risk assessments may be performed for children with blood lead levels of 3.5 µg/dL or greater on a venous result if the assessing agency has the resources and chooses to do risk assessments for venous levels 3.5 – 4.9 µg/dL. At this time, risk assessing agencies in Minnesota are only planning to do risk assessments for children with blood lead levels at or above 5.0 µg/dL on a venous result. *Figure 1: Process and Role of Public Health* below outlines the process for public health services.

Figure 1: Process and Role of Public Health



* For individuals who receive services through a Tribe, services may be provided by Tribal public health rather than local public health.

Case Management

When the Minnesota Department of Health receives an elevated blood lead level for a child under 18 years of age, it is sent out to the relevant local public health department. See *Figure 1* for the public health process. Depending on the location, this may be the city or county public health department or the Community Health Board serving that county. For individuals who receive services through a Tribe, services may be provided by Tribal public health rather than local public health. A staff member from that local public health department (usually a public health nurse) will provide health education and case management for the family. Depending on the local public health department's resources and the child's blood lead level, case management may include sending a letter with educational materials, calling the family, doing a home visit, or a combination of these services. If an environmental risk assessment is performed, the public health nurse may conduct a home visit in conjunction with the risk assessment.

Environmental Investigations (Risk Assessments)

When a child under 18 years of age has an EBLL (≥ 5 µg/dL) on a venous sample, an environmental investigation, or a risk assessment, is performed. An environmental risk assessment is an investigation to determine the existence, nature, severity, and location of lead hazards. A licensed risk assessor goes to the primary residence and other locations a child spends significant amounts of time to test for lead. Current risk assessing agencies in Minnesota include MDH, the Minneapolis Health Department, and Saint Paul – Ramsey County Public Health. Health care providers do not need to call to request risk assessments for patients with an EBLL (≥ 5 µg/dL) on a venous sample; MDH sends results to risk assessing agencies automatically.

According to Minnesota Statues 144.9504 (https://www.revisor.mn.gov/statutes/cite/144.9504):

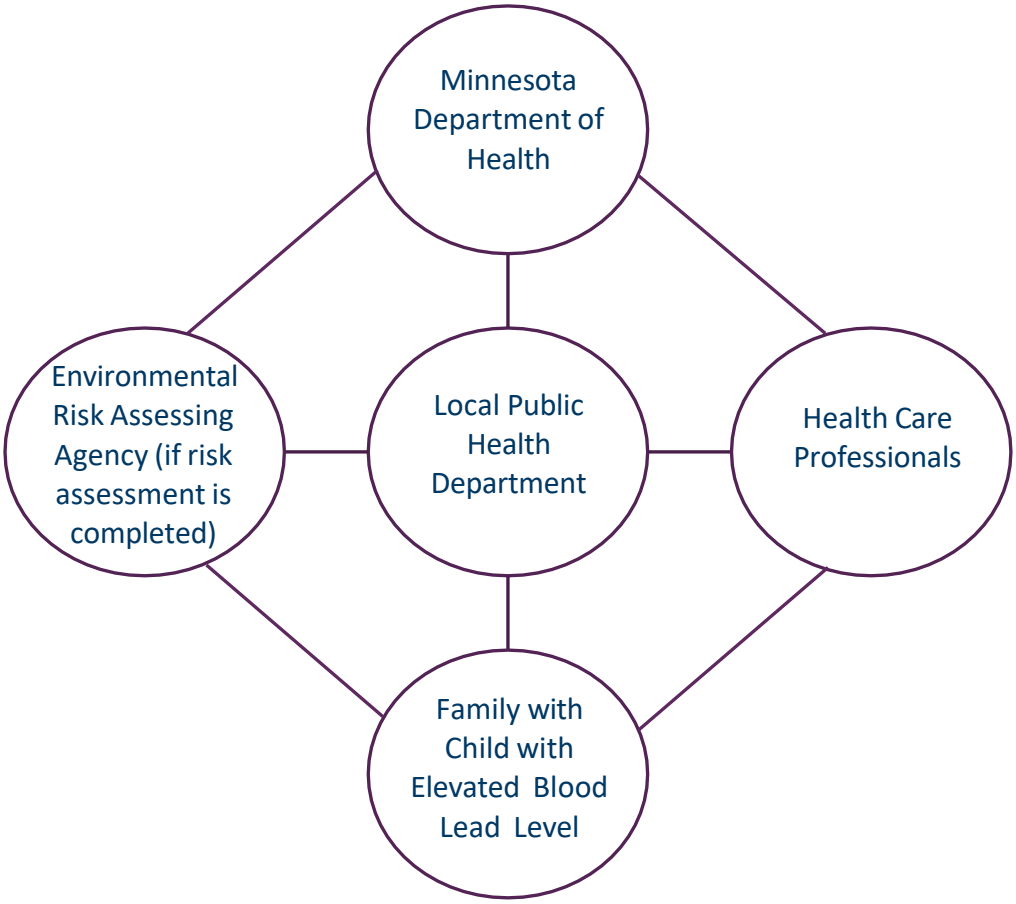
- An environmental risk assessment must be performed for any child under 18 years of age or pregnant/breastfeeding person with a venous blood lead level of at least 5.0 µg/dL.
  - An environmental risk assessment can be performed for any child under 18 years of age or pregnant/breastfeeding person with any elevated blood lead level on a venous result, as risk assessment agency resources allow.
- Environmental risk assessments can be performed at the primary residence, residential or commercial childcare facility, playgrounds, schools, or other locations where the child spends more than a few hours a week.
  - Under some circumstances, risk assessments can also be performed at residences where the child no longer lives.
- Risk assessments can also be done at other locations where lead hazards are suspected in addition to homes, childcare facilities, playgrounds, and schools.
  - If another location outside of the home is the original source of lead exposure, the assessing agency may order the responsible person of that location to perform lead hazard reduction and remediate the conditions that allow the lead hazard to migrate from the source location to the home.
  - An assessing agency may refer investigations at sites other than the child's or pregnant person's residence to the MDH commissioner for follow up.
- Environmental risk assessments are to be completed within the following timelines from when the Minnesota Department of Health is notified of a venous blood lead level for a child under 18 years of age or a pregnant/breastfeeding person:
  - Within 48 hours for a venous blood lead level (BLL) of 60 µg/dL or greater
  - Within 5 working days for a venous BLL of 45.0 – 59.9 µg/dL
  - Within 10 working days for a venous BLL of 10.0 – 44.9 µg/dL
  - Within 20 working days for a venous BLL of 5.0 – 9.9 µg/dL.
- Following a risk assessment by a licensed lead risk assessor, lead correction orders can be issued to the property owner to address lead hazards. Property owners have 60 days to address lead hazards identified in the correction orders.
  - If an environmental risk assessment is performed, it is the responsibility of the licensed risk assessor to follow the property until it passes clearance inspection. In order to pass clearance inspection, the affected property must have no deteriorated lead paint and no bare soil or lead dust exceeding soil or dust standards.

Technical Assistance and Communication

The Minnesota Department of Health offers guidance and answers questions from health care providers and local public health departments regarding blood lead testing and elevated blood lead case management. If health care providers have questions about case management or environmental risk assessments or have information to share that may be relevant to addressing the lead exposure, they are encouraged to contact the Minnesota Department of Health or the relevant local public health department. Staff at the Minnesota Department of Health and local public health departments typically work standard business hours and will respond to messages as soon as they are able.

Figure 2 shows the common communication pathways among health care professionals, public health, environmental risk assessors, and families. Local public health departments often have the most direct contact with families and have the most information about sources of lead and other factors that may be contributing to a child's blood lead level. The Minnesota Department of Health may have information regarding sources of lead identified in environmental risk assessments and notes from local public health departments and can share relevant information or questions from health care professionals with local public health or environmental risk assessors.

Figure 2: Communication Pathways



Special Populations

Refugees and Other Newcomer Populations

Refugees are persons who are forced to leave their home country because of disasters, war, or persecution. Refugees who come to Minnesota may be at high risk for lead exposure in their country of origin as well as further exposure from both housing and non-housing sources of lead once they arrive in the United States. The percentage of EBLLs for refugees who receive a blood lead test is ten times higher than the percentage of elevated blood lead levels among Minnesota children in general.

All refugees less than 17 years of age should receive a blood lead test upon arrival in Minnesota according to the CDC Refugee Health Domestic Guidance (https://www.cdc.gov/immigrant-refugee-health/hcp/domestic-guidance/lead.html) and the Minnesota Refugee Health Provider Guide: Childhood Lead Screening (https://www.health.state.mn.us/communities/rih/guide/9lead.html). In addition, all refugee children less than 72 months of age should receive a blood lead test from their health care provider three to six months after placement in permanent residence, regardless of their initial blood lead level.

Other newcomer populations such as recent immigrants, asylum seekers, migrants, or international adoptees may also be at higher risk of lead exposure from their country of origin. Health care providers should follow the Childhood Blood Lead Screening Guidelines for Minnesota (https://www.health.state.mn.us/communities/environment/lead/prof/guidelines.html#screening) for blood lead testing for these populations, but may also refer to the refugee health guidance above.

Children receiving Medical Assistance or MinnesotaCare

Children enrolled in Medical Assistance (MA) or MinnesotaCare (MNCare), Minnesota's Medicaid programs, tend to be more than twice as likely to have elevated blood lead levels as non-enrolled children. All health care providers are required to test all children receiving Medical Assistance at 12 and 24 months of age, and all children up to 6 years of age who did not receive a blood lead test at their 24-month checkup. This is a federal Medicaid requirement. For more about this requirement and testing schedule, see below resources:

- Medicaid Lead Screening (https://www.medicaid.gov/medicaid/benefits/early-and-periodic-screening-diagnostic-and-treatment/lead-screening/index.html)
- Minnesota Department of Human Services: Child & Teen Checkups (C&TC): Blood Lead Test (https://www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=dhs16_150092#blood)
- MDH Child and Teen Checkups: Lead Testing: Fact Sheet for Primary Care Providers (https://www.health.state.mn.us/docs/people/childrenyouth/ctc/lead.pdf)
- Minnesota Child and Teen Checkup (C&TC) Schedule of Age-Related Screening Standards: (https://edocs.dhs.state.mn.us/lfserver/Public/DHS-3379-ENG)
- American Academy of Pediatrics (AAP) Recommendations for Preventative Pediatric Health Care (https://downloads.aap.org/AAP/PDF/periodicity_schedule.pdf).

Sources of Lead

Health care professionals should be aware of common sources of lead when interacting with families. For children, the primary route of exposure is ingestion of products or dust containing lead. The following list is provided to give background information on common sources of lead, and is also available in a webpage or factsheet at MDH Common Sources of Lead (https://www.health.state.mn.us/communities/environment/lead/fs/common.html), which also provides information on how to reduce exposure to different lead sources. This and other educational materials on specific lead sources can be found at MDH Lead Fact Sheets and Brochures (www.health.state.mn.us/communities/environment/lead/fs/index.html). MDH can provide additional information or technical assistance when unusual or newly emerging lead sources are suspected.

Paint and Dust

- Lead dust is currently the main source of lead exposure among children. Even tiny amounts of dust from lead paint can cause a child's blood levels to rise. Household dust can contain lead from:
  - Lead-painted friction surfaces such as windows, doors, or floors
  - Cracked, chipped, or peeling lead-based paint
  - Home remodeling, renovation, or paint projects
  - Contaminated soil tracked into the home.
- Homes built before 1978 may contain lead-based paint. Children can be exposed to lead in paint through:
  - Lead-painted friction surfaces such as windows, doors, or floors
  - Cracked, chipped, or peeling lead-based paint
  - Home remodeling, renovation, or paint projects.
- One third of homes in Minnesota may have lead paint. Older homes are more likely to have sources of lead.
  - 75–85% of Minnesota children with a high blood lead level have hazardous lead paint in their home.
  - Lead paint exposures can occur at home, daycare, or a relative's home.
  - Window components, porches, and home exteriors are common areas to find lead-based paint.
    - Other areas include walls, floors, doors, door frames, bannisters, baseboards, and antique bathtubs.
- Cleaning Up Lead Dust in Your Home (https://www.health.state.mn.us/communities/environment/lead/docs/fs/cleaningup.pdf) provides information about cleaning up dust and paint chips.

Renovation of Older Homes

- Renovation creates large amounts of dust, which can lead to both lead inhalation and ingestion exposures and high blood lead levels in homes built before 1978.
  - Certain renovation practices, such dry-sanding paint or using heat guns to remove paint are particularly dangerous.

- Lead-safe work practices should be used when renovating a home built before 1978. Information on lead-safe work practices and information on hiring a contractor and certifications for different types of renovation or lead removal work are available at MDH Lead Poisoning Prevention: Homeowner Information (https://www.health.state.mn.us/communities/environment/lead/home/index.html).
- Federal law requires that all contractors performing renovation work in pre-1978 residences to be certified. More information is available at EPA Lead Renovation, Repair, and Painting Program (https://www.epa.gov/lead/lead-renovation-repair-and-painting-program) and Minnesota Lead Renovation, Repair, and Paint (RRP) Rulemaking (https://www.health.state.mn.us/communities/environment/lead/rules/rrp/index.html).

Soil and Water

Soil

- Bare soil can be a source of lead, especially in areas near busy streets, old homes, buildings, or fences from past uses of leaded gasoline or lead-based paint.
  - 30–40% of Minnesota children with a high blood lead level have hazardous levels of lead in soil at their home.
  - Bare soil should be covered with a durable ground cover such as grass or mulch and shoes should be removed at the door to reduce the chance of lead exposure.

Water

- Lead in water is not commonly a cause of elevated blood lead levels in Minnesota but may contribute to low levels of lead.
- Municipal water supplies and private wells in Minnesota are not generally a substantial source of lead. Lead can enter drinking water as it passes through household plumbing or lead service lines.
  - Homes built before 1986 may have lead parts in their plumbing systems. Plumbing in buildings built after 1986 may still have some parts containing low levels of lead.
- Water can be tested if there is a concern about lead contamination. Local jurisdictions (cities or counties) may have free or discounted water testing available; this varies from jurisdiction to jurisdiction. Well Testing, Results, and Options (www.health.state.mn.us/communities/environment/water/wells/waterquality/tips.html) has more information about testing well water.
- Only water from the cold tap should be used for cooking or drinking. Let the water run before using it for drinking or cooking.
  - If you have a lead service line, let the water run for 3-5 minutes. If you do not have a lead service line, let the water run for 30-60 seconds.

- More information is available at Lead in Drinking Water (www.health.state.mn.us/communities/environment/water/contaminants/lead.html).

Lead-Related Occupations and Industries

Lead is used in a variety of industries. Children may be exposed to lead dust if it is carried home from the workplace on the clothing, shoes, or body of a household member who works with lead. Precautions should be taken to reduce children's exposure to take-home lead, including:

- Washing hands frequently
- Not smoking or eating in areas where lead may be present
- Taking shoes off before entering the home
- Changing out of work clothes and shoes and showering before getting in one's vehicle or going home
- Washing work clothes separately from other clothing or having work clothes laundered at work.

Hobbies can also be a source of lead exposure. Often, hobbies are performed in or around the home, leading to increased opportunities for family members to be exposed. Hobbies that involve lead should be performed in well-ventilated areas and away from areas to which children have access.

Common occupations, industries, and hobbies where lead exposure may occur include:

- Art including ceramics/pottery, jewelry, painting, stained glass, prints, and lead figurines
- Automobile and ship manufacturing, body work, and repair
- Manufacturing of glass, paint, pigment, plastic, ammunition, fishing sinkers, batteries, ceramics, cable, wire, countertops, industrial machinery, rubber products, and electrical components
- Construction, demolition, and bridge reconstruction
- Renovation, refinishing, remodeling, lead abatement, painting, paint removal
- Plumbing, pipe fitting, radiator repairs
- Restoring or refinishing antique products and furniture, or upcycling and reuse of old barn wood or painted wood
- Using or working at firing ranges, making ammunitions or explosives, reloading shotgun shells, working as a gunsmith or police officer, and being a member of the armed forces
- Metal processing and industrial work including mining or refining lead, cable and wire splicing or production, welding, burning, or cutting metals, or foundry work
- Recycling or salvaging metal, glass, electronics, and batteries, working as a solid waste incinerator operators or junkyard employee
- Bleigiessen or Molybdomancy (tradition of dropping molten lead into water to make future predictions)
- This should not be considered an exhaustive list of all potential occupational lead sources.

Food and Cookware

Imported or Recalled Spices and Candies

- Imported or recalled spices may contain lead.
  - Spices most at risk are those that are unlabeled and have been purchased outside of the
    U.S. If spices are suspected, families should switch to spices purchased in the U.S.
  - Examples of spices that have been found to contain lead include:
    - Turmeric, which is the most common spice found to be adulterated with lead in Minnesota communities
    - Other spices such as cinnamon, chilies, curry powder, or various spice mixes.
  - Food products that contain spices may be at risk if the spices contain lead.
    - If there is a recall of a spice or food for lead, families should stop using the product and follow product recall instructions.
    - Imported candy from multiple countries has also been found to contain lead.

Other Food Products

- Game meat harvested with lead ammunition
  - Lead bullets can fragment extensively, and trimming away meat around the wound channel is not sufficient to prevent lead exposure.
  - Alternatives include use of non-lead ammunition, bow hunting, or consumption of other protein sources.
- Food grown in lead-contaminated soils
  - When gardening in potentially contaminated sites, test soil for contaminants or build raised beds and use clean soil as discussed in MDH Gardening in Urban Soil (https://www.health.state.mn.us/communities/environment/hazardous/topics/gardurbsoil.html).

Imported or Handmade Pottery or Ceramics, Other Cookware

- Imported or handmade pottery, ceramics, or other cookware with a lead glaze may contain lead that could leech into food or drink.
  - Lead is most likely to leach into food or drink when ceramics or cookware are used for storing liquids or acidic materials, for heating foods in the oven, stovetop, or microwave, or when lead-glazed pottery is fired under lower temperatures.
- The Food and Drug Administration (FDA) has regulations for labeling lead-glazed pottery as not for use with food. However, some imported or handmade products may not comply, and the use of heirloom cookware is common.
  - Many shops in Minnesota do small-scale imports of pottery, especially from Latin American countries, which have not undergone FDA lead testing or inspection.
- If pottery, ceramics, or cookware are suspected, it is recommended that the family replace the product with a lead-free version or use the product for decoration purposes only.
- Examples of pottery, ceramics, or other cookware found to contain lead include:
  - Bean pots and Tajines
  - Clay or ceramic pots, pitchers, mugs, jars, and dishes, especially ones that

are painted or antiques
- Handmade or imported pottery with lead glaze
- Imported or antique pressure cookers or crockpots
- Pewter dishes and leaded crystal.

Cosmetics and Traditional or Alternative Remedies

Cosmetics and Religious Powders or Products

- Imported cosmetics and religious powders or products may contain lead.
- Traditional cosmetics or religious powders may be culturally important to individuals, so it is important to work with families to help them understand possible risks and benefits.
- The following are some examples of traditional medications/alternative remedies grouped by the community known to use the product:
  - South Asian and Indian Communities:
    - Sindoor, vermillion, or kumkum is a red or orange powder used for bindi dots, along the hairline to signify marriage status, for religious purposes, or on prayer stations.
  - Asian, African, and Middle Eastern Communities:
    - Kohl, alkohl, kajal, tiro, or surma is a black powder or liquid used as eyeliner for cosmetic purposes, to promote eye health, to ward off evil, or to treat skin infections or promote healing around umbilical stumps.
      - Kohl is banned for sale in the United States.

Traditional Medications, Alternative Remedies and Products

- Products from many forms of traditional, herbal, or alternative medicines and remedies have been found to contain lead.
  - Products may be imported or purchased in the United States in stores or online, and country of origin cannot be used as an indicator of product safety.
  - Traditional remedies may be culturally important to individuals, so it is important to work with families to help them understand possible risks and benefits.
  - The use of traditional or alternative remedies is not confined to immigrant communities.
- The following are some examples of traditional medications/alternative remedies that have been found to contain lead:
  - Ayurvedic medicines
    - Ayurvedic medicines are Hindu traditional medicines and have many names and a variety of forms and uses and are often used by people from many different backgrounds.
    - Rasa Shastra is a subset of Ayurvedic medicines and is more likely to contain lead because they may have heavy metals or minerals added intentionally for purported therapeutic effects.
  - Chinese traditional medicines and traditional medicines from other communities
    - These are generally powders used to treat a variety of illnesses, including digestion issues, fevers, skin infections, fevers, colic, and respiratory issues.

- Various forms of clay, chalk, or earth is sometimes taken internally for various uses such as treating morning sickness or promoting digestion.
  - Calabash chalk or clay, bentonite clay, and diatomaceous earth are some of the most common forms.
- Herbal supplements including dietary supplements
- Imported gripe water
- Other sources: this is not an all-inclusive list

Other Sources of Lead

Exposures that Occurred in Another Country

- Individuals who have recently moved from or spent substantial time in another country may have greater risk for lead exposure, depending on the environmental regulations and sources of exposure in that country.
  - Lead paint and leaded gasoline are still allowed in some countries.
  - Some countries have stricter regulations about lead in foods and products than others.

Pica Behavior

- Pica is the deliberate ingestion of nonfood items and can cause elevated levels of lead in people. Pica in children can include chewing, gnawing on, or eating materials including:
  - Paint chips
  - Soil or clay
  - Windowsills, bannisters, floorboards, doorframes, painted surfaces in homes or on furniture or toys, plaster, or sheetrock.
- If pica behavior is identified, it should be managed to prevent exposure to substances containing lead.

Jewelry, Amulets, Toys, Keys, Fishing Sinkers, Chalk, and Furniture

- Children may put objects that may contain lead in their mouths. These may include:
  - Jewelry, amulets, beads, hair clips, clothing charms or good luck charms
    - Amulets may have different names, such as tabeez or tabiz, and may be worn for religious purposes or to ward off evil and may not be considered jewelry by families.
  - Keys, including car and door keys
  - Fishing sinkers, bullets, or pellets
  - Chalk, especially colored sidewalk chalk
  - Imported, antique, painted, or recalled children's toys, blocks, musical instruments, and metal toys such as cars
  - Antique furniture, & decorative pieces made from recycled/upcycled wood, doors, shutters, or other products containing lead paint from old buildings or barns.

Retained Bullets

- An individual may have an elevated BLL if they have any retained bullets in their body from past gunshot wounds.

Resources for Identifying Products Containing Lead, Including Recalls

- Some resources for identifying potential items containing lead are listed below.
- To check for recalled products that were sold in the United States and contain lead:
  - Recalled foods, supplements, cosmetics, and some other products are listed on the U.S. Food & Drug Administration (FDA) Recalls, Market Withdrawals, & Safety Alerts (www.fda.gov/safety/recalls-market-withdrawals-safety-alerts) website.
  - Recalled items such as toys are listed on the U.S. Consumer Product Safety Commission (https://www.cpsc.gov/Recalls) website.
- To gain a general idea of potential products containing lead:
  - New York City maintains a database open to the public of the Metal Content of Consumer Products Tested by the NYC Health Department (https://data.cityofnewyork.us/Health/Metal-Content-of-Consumer-Products-Tested-by-the-N/da9u-wz3r/data)
    - This database includes over 7,500 products tested for lead in New York City, including food, spices, cosmetics, medications, children's products, pottery, jewelry, and other sources. While individual products may or may not be found in Minnesota, the database provides ideas of potential sources.

Resources

Minnesota Department of Health Resources

Contact Information

MDH contact information for the most common questions and concerns from health care providers are listed below. Other contact information is available at the MDH Lead Poisoning Prevention Contacts (https://www.health.state.mn.us/communities/environment/lead/contactus.html).

Questions Regarding:	Contact Information:
▪ Elevated blood lead case management ▪ Guidance on blood lead testing	Phone Number: 651-201-4892
▪ Reporting blood lead results to MDH ▪ Incoming or outgoing blood lead results	Phone Number: 651-201-4919 Email: health.bloodleadresults@state.mn.us Fax Number: 800-388-9389 Mailing Address: Minnesota Department of Health, Health Risk Intervention Unit, P.O. Box 64975, St. Paul, MN 55164-0975

Educational Materials

Lead Fact Sheets and Brochures (https://www.health.state.mn.us/communities/environment/lead/fs/index.html) contains educational materials about lead exposure and prevention in 19 different languages. Printed materials may be ordered through an order form on this page or viewed online.

Guidelines

In addition to this document, MDH has developed and periodically updated Blood Lead Level Guidelines (https://www.health.state.mn.us/communities/environment/lead/prof/guidelines.html) for lead. These are available on the webpage and include:

- Childhood Blood Lead Treatment Guidelines for Minnesota,
- Childhood Blood Lead Case Management Guidelines for Minnesota,
- Blood Lead Screening Guidelines for Pregnant and Breastfeeding Women in Minnesota, &
- *Draft* Adult Blood Lead Clinical Treatment Guidelines for Minnesota.

Accessing Data

The Minnesota Public Health Data Access: Childhood Lead Exposure (https://data.web.health.state.mn.us/web/mndata/lead) contains maps, charts and data for childhood lead exposure, lead testing, and risk factors. Data are available at the state level and by county and census tract.

Minnesota Department of Health Lead Webpage

Additional information on topics not covered in these guidelines may be found at Minnesota Department of Health: Lead (https://www.health.state.mn.us/communities/environment/lead/index.html).

Multi-Resource Sites

- Help Me Connect (https://helpmeconnect.web.health.state.mn.us/HelpMeConnect/))
  - Help Me Connect is a navigator connecting expectant families, families with young children (birth – 8 years old) and those working with families to services in their local communities that support healthy child development and family well-being.
  - It includes information on multiple topics, including healthy development and screening, developmental and behavior concerns, disability services and resources, early learning and childcare, family well-being and mental health, dental and health care, basic needs, legal services, and other resources.
- United Way 211 (https://211unitedway.org/)
  - United Way 2-1-1 provides free and confidential health and human services information for people in Minnesota. Their services are available 24 hours a day, 7 days a week in all languages to connect families to resources and information.
    - They are available at 1-800-543-7709 or 651-291-0211 or via text by texting the local zip code to 898-211*.
    - The 211 website has many resources listed for topics including eviction, childcare providers, education, employment, food, government provided benefits and

insurance programs, health care, housing/shelter, individual and family support services, mental health, public assistance programs, temporary financial assistance, transportation, utilities, and other resources.

Medical Resources

- Medical assistance programs
  - Insurance information and free certified assisters for medical assistance enrollment can be found at MNsure (https://www.mnsure.org/).
  - Child and Teen Checkups is the name for Minnesota's Early and Periodic Screening, Diagnosis and Treatment (EPSDT) Program. Child and Teen Checkup visits are available to children receiving medical assistance. Child and Teen Checkups Information for Families (www.health.state.mn.us/people/childrenyouth/ctc/families.html) has information about services available.
- Transportation assistance to medical appointments
  - Transportation assistance may be available through multiple providers, including:
    - Local city or county resources
    - Public transit services
    - Taxis or ride share services
    - Non-profit organizations and volunteer groups
    - Medical/clinic systems
    - Medical insurance
    - DHS Transportation Services - Nonemergency Medical Transportation (NEMT) Services (Overview) (www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=ID_008991) provides reimbursement for rides to medical appointments for individuals receiving Medical Assistance or MinnesotaCare.
- Family home visiting
  - Some families may qualify for family home visiting services to help improve their health and well-being, depending on local resources.

Learning and Developmental Resources

It is important to remember that children may not show signs of learning difficulties or developmental delays until long after their exposure to lead. Family members and professionals working with families should remain alert to signs of delays so early intervention services can be provided.

- Developmental Assessments
  - It is strongly recommended that the child receive a developmental screening test. Assessments may be performed by the health care provider or the child may be referred to a local community program that administers developmental screening tests
  - For advice on specific tests, go to Developmental and Social-Emotional Screening of Young Children (0-5 years of age) in Minnesota

(www.health.state.mn.us/people/childrenyouth/ctc/devscreen/index.html)

- Follow Along
  - The Follow Along Program is a free service that helps track developmental milestones. Parents or local public health can make referrals. Children can be referred at any blood lead level. More information and local contacts can be found at Follow Along Program (www.health.state.mn.us/people/childrenyouth/fap/index.html).
- Help Me Grow
  - Help Me Grow is part of Minnesota's statewide intervention system under the Individuals with Disabilities Education Act.
  - Children with a venous blood lead level ≥ 45 µg/dL are automatically eligible for Help Me Grow. Children with a venous blood lead level ≥ 15 µg/dL should be referred for an evaluation to determine eligibility for Help Me Grow.
  - Children with any blood lead level who are showing signs of developmental delays may also be eligible for Help Me Grow.
  - Anyone can make referrals to Help Me Grow, including health professionals. Referral information can be found at Help Me Grow How to Refer (helpmegrowmn.org/HMG/GetHelpChild/HowRefer/index.html).
- Head Start and Early Head Start
  - Head Start programs promote school readiness of children ages birth to 5 from low- income families by supporting their development in a comprehensive way. More information on local programs can be found through the Minnesota Department of Education: Head Start (education.state.mn.us/MDE/fam/elsprog/start/).

Nutritional Resources

- Women Infants and Children Program (WIC)
  - Families who meet income requirements may qualify for nutrition information and nutritious foods.
  - Program eligibility requirements and referral information can be found at MDH: Women, Infants & Children (WIC) Program (www.health.state.mn.us/wic/) or at 1-800-WIC-4030 (1-800- 942-4030).
- Food Assistance programs through the MN Department of Human Services
  - Information on the food and assistance programs through the Minnesota Department of Human Services, including SNAP and emergency food services can be found at MN Department of Human Services: Supplemental Nutrition Assistance Program (SNAP) (https://mn.gov/dhs/people-we-serve/children-and-families/economic-assistance/food-nutrition/programs-and-services/).
  - Food assistance programs may include:
    - Supplemental Nutrition Assistance Program (SNAP)
    - Summer Electronic Benefit Transfer (Summer EBT)
    - Supplemental Nutrition Assistance Program - Employment and Training Program (SNAP - E&T)
    - Minnesota Family Investment Program (MFIP).
- The Minnesota Food Helpline helps assess and provide solutions to food needs. This is a

program of Hunger Solutions Minnesota, and can be reached at 1-888-711-1151 or at Minnesota Food Helpline (www.hungersolutions.org/programs/mn-food-helpline/).

Lead in Housing

There are resources available for individuals doing work on homes or looking to hire a contractor to address sources of lead in housing.

- MDH Homeowner Information (https://www.health.state.mn.us/communities/environment/lead/home/index.html)
  - Site includes information about testing for lead, safely doing renovation work, and hiring licensed contractors.
- City of Minneapolis: Training Descriptions and Providers: Lead Safe Work Practices Training (https://www2.minneapolismn.gov/resident-services/property-housing/healthy-homes/lead/training-descriptions-providers/)
  - Lead safe training courses are designed for owner-occupied property owners whose intent is to do maintenance and remodeling projects on homes built prior to 1978.

Other resources may be available for addressing lead in housing, including services for both short-term and long-term lead abatement. These resources may be dependent on a risk assessment being completed and housing-based sources of lead being identified.

Other Resources

- Many medical clinics have their own social services systems and resources.
- For additional resources regarding housing or legal help, please refer to the Childhood Blood Lead Case Management Guidelines for Minnesota: Reference Manual (https://www.health.state.mn.us/communities/environment/lead/prof/guidelines.html#case).

Commonly Used Terms

Blood lead level (BLL): A diagnostic blood lead test with units of micrograms of lead per deciliter of whole blood in any person.

Blood lead reference value (BLRV): A measure used by the CDC that is based on the 97.5th percentile of the blood lead distribution in U.S. children ages 1–5 years from the most recent two cycles of data from the National Health and Nutrition Examination Survey (NHANES).

Child: An individual under 18 years of age.

Clearance inspection: Identification of deteriorated paint and bare soil and resampling and analysis of interior dust lead concentrations in a residence to ensure that an environmental case can be closed.

Capillary blood sample: A quantity of blood drawn from a capillary. The sample generally is collected by finger stick. Elevated results must be confirmed with a venous blood sample.

Case manager: A local public health professional who works with the families of children with EBLLs to assess needs and facilitate access to needed resources.

Community Health Board (CHB): The legal governing authority for local public health in Minnesota. Community Health Boards serve at least 30,000 people and can include one county/jurisdiction or multiple neighboring counties/jurisdictions.

Environmental risk assessment, or lead risk assessment: An investigation to determine the existence, nature, severity, and location of lead hazards.

Elevated blood lead level (EBLL): A diagnostic blood lead test with a result that is equal to or greater than 3.5 micrograms of lead per deciliter of whole blood in any person.

Health care provider: A physician, nurse practitioner, physician assistant, nurse, or other health professional in a medical setting.

Interim controls: A set of measures intended to temporarily reduce human exposure or likely exposure to known or presumed lead hazards, including specialized cleaning, repairs, maintenance, painting, temporary encapsulation, or enclosure.

Lead hazard: A condition that causes exposure to lead from dust, bare soil, drinking water, or deteriorated paint that exceeds MDH standards.

Lead hazard reduction: Abatement or interim controls undertaken to make a residence or other facility lead safe.

Lead order or lead correction order: A legal instrument to compel a property owner to address lead hazards according to the specifications given by the assessing agency.

Lead risk assessor: An individual who performs lead risk assessments or lead inspections and who has been licensed by MDH.

Lead risk assessing agency: An agency that performs lead risk assessments or lead inspections with lead risk assessors who has been licensed by MDH.

Lead-safe practices: Methods for construction, renovation, remodeling, or maintenance activities that are not regulated lead work and that are performed so that they do not result in exposure to lead.

Local public health (LPH) department: The public health department or agency of a city, county, or Community Health Board that is working with an individual with an elevated blood lead level.

Minnesota Department of Health (MDH): The state health department that receives all blood lead tests results for Minnesota residents and provides case coordination, technical assistance, and environmental risk assessments.

Minnesota Regional Poison Center: The system that provides free recommendations for poison exposure management and public and professional education services for the people living in Minnesota, North Dakota, and South Dakota.

Pediatric Environmental Health Specialty Unit (PEHSU): Academically based units that are typically at university medical centers that serve as a source of medical information and advice on environmental conditions that influence reproductive and children's health.

Refugee: A foreign-born resident who is not a United States citizen and who cannot return to his or her country of origin or last residence because of persecution or the well-founded fear of persecution because of race, religion, nationality, membership in a particular social group, or political opinion, as determined by the State Department or United States Citizenship and Immigration Services (USCIS).

Region 5 Pediatric Environmental Health Specialty Unit (PEHSU): The Pediatric Environmental Health Specialty Unit (PEHSU) that serves the geographic region that includes Minnesota.

Performing Facility: The hospital, medical clinic, medical laboratory, other facility, or individual performing blood lead analysis.

Primary prevention: Preventing lead exposure before blood levels become elevated.

Secondary prevention: Intervention to mitigate health effects on people with EBLLs.

Swab team services: Activities that provide protection from lead hazards primarily through the use of interim controls, such as:

- Removing lead dust by washing, vacuuming with high efficiency particle accumulator (HEPA) or wet vacuum cleaners, and cleaning the interior of residential property, and
- Removing loose paint and paint chips and repainting or installing guards to protect intact paint.

Tribal Nation health department: The public health department or agency of a Tribal Nation that is working with an individual with an EBLL.

U.S. Centers for Disease Control and Prevention (CDC): A U.S. federal government agency whose mission is to protect public health. The CDC has a Childhood Lead Poisoning Prevention program.

Venous blood sample: A quantity of blood drawn from a vein. This is considered a confirmatory test and is required for a child to be eligible for some services.

µg/dL: Micrograms of lead per deciliter of whole blood. Also expressed as mcg/dL.