

Lead Exposure in Children

Public Health Case Management Guidelines

Case management of children with blood lead levels at or above the blood lead reference value (BLRV) involves coordinating, providing and overseeing services required to reduce their BLLs below the reference value. Effective case management means ongoing communication with the caregivers and a cooperative approach to solving any problems that may arise during efforts to decrease the child's BLL and eliminate lead hazards in the child's environment.

Case Management for Initial Capillary Test

Capillary BLL	INITIAL CAPILLARY TEST
≥3.5 µg/dL	<p style="text-align: center;">Within 1 month</p> <p>Notify the caregiver: Phone call or letter to family with BLL results and follow-up testing recommendations (see medical management recommendations for schedule).</p> <p>Contact the family and/or health care provider if confirmatory test not completed within recommended timeframe.</p>

Case Management for Venous or Confirmed Test

Confirmed BLL	INITIAL VENOUS OR CONFIRMED TEST
3.5 – 9 µg/dL	<p style="text-align: center;">Within 1 month</p> <p>Notify the caregiver: Contact family with BLL results and follow-up testing recommendations.</p> <p>Provide health education: Send educational materials to family about sources of lead and methods of prevention.</p> <p>Obtain an environmental history: Interview the caregiver to assess the child's environmental history and risk factors. Recommend ways to prevent further lead exposure.</p> <p>Contact the health care provider: Provide medical management recommendations.</p> <p>Ensure follow-up test scheduled within 3 months: Contact health care provider and/or family if follow-up test not completed within 3 months.</p> <p>Refer the family to developmental programs and community resources: Make referrals as needed to: health care providers' office, early intervention and/or other early childhood programs, health, nutrition counseling or WIC, and housing and/or social services when appropriate.</p>
10 – 19 µg/dL	<p style="text-align: center;">Within 2 weeks</p> <p>Same actions as above for 3.5-9 µg/dL, plus:</p> <p>Arrange on-site environmental investigation and educational home visit: Environmental investigation of the home to identify potential sources of lead. Recommend ways to prevent further lead exposure.</p> <p>Arrange translation/interpretation services (if applicable)</p> <p>Assess family needs: Assess the child's status and needs (medical, environmental, nutritional, developmental, housing, and social services).</p> <p>Develop a case management plan: Collaborate with the family, physicians, and other providers to develop an appropriate plan based on the needs assessment. Include all necessary referrals in the plan.</p>
20 – 44 µg/dL	<p style="text-align: center;">Within 1 week</p> <p>Same actions as above for 10-19 µg/dL, plus:</p> <p>Ensure follow-up test scheduled within 2-4 weeks: Higher BLLs (≥25 µg/dL) may require more frequent monitoring. Contact healthcare provider and/or family if follow-up test is not completed within 4 weeks.</p>
≥45 µg/dL	<p style="text-align: center;">Within 2 days</p> <p>Same actions as above for 20-44 µg/dL, plus:</p> <p>Chelation treatment: Chelation therapy may be indicated. Discuss treatment with health care provider. Chelation should be done in consultation with an expert. Contact Pediatric Environmental Health Specialty Unit (1-800-421-9916) or Poison Control Center (1-800-222-1222).</p> <p>Facilitate alternative lead-safe housing: A lead-safe environment must be assured before chelation.</p>

Definitions

Blood Lead Reference Level: 3.5 µg/dL

Elevated BLL: Any blood lead level (BLL) at or above the Blood Lead Reference Level in a child age 0-15 years old.

Unconfirmed/Suspect Elevated BLL: A child with a single capillary blood lead test \geq 3.5 µg/dL.

Confirmed Elevated BLL: A child with at least one venous blood lead test \geq 3.5 µg/dL (or when venous test not possible, two capillary blood test \geq 3.5 µg/dL drawn within 12 weeks of each other).

Schedule for Confirmation and Retesting

Initial Capillary Blood Lead Level Schedule for Obtaining Venous Sample	
Capillary BLL	Confirm with Venous Blood Test
<3.5 µg/dL	No confirmation needed. Repeat test according to Blood Lead Screening Plan.
3.5 – 9 µg/dL	Within 3 months*
10 – 19 µg/dL	Within 1 month*
20 – 44 µg/dL	Within 2 weeks*
\geq 45 µg/dL	Within 24 - 48 hours*
*The higher the BLL on a screening test, the more urgent the need for confirmatory testing.	

Initial Venous Blood Lead Level Schedule for Follow-up Testing		
Venous BLL	Re-test schedule for first 2-4 tests	Re-test schedule after BLLs declining
3.5 – 9 µg/dL	3 months*	6-9 months
10 – 19 µg/dL	1-3 months*	3-6 months
20 – 44 µg/dL	2-4 weeks	1-3 months
\geq 45 µg/dL	As soon as possible. Consult with expert.	
*Some providers may choose to repeat BLL on all new patients within a month to ensure the level is not rising more quickly than anticipated.		

Case Management for Elevated Blood Lead Levels

The case manager should develop a plan with the family that describes the steps needed to lower the blood lead level, prevent re-exposure, and identify services needed to treat/manage lead in blood. Note: The case manager does not need to directly provide all follow-up care but should ensure that needed care is provided. Areas of the plan should cover the following:

1. Identification/reduction/elimination of environmental hazards
 - Assessment of all possible exposure sources.
 - Assist with short-term hazard reduction (i.e. temporary relocation to lead-safe housing if needed).
 - Assist with long-term hazard eliminations (including permanent relocation to lead-safe housing if needed).
 - Identification and removal of non-residential exposures (i.e. alternative medicines, spices, take-home exposures from parent's occupation).
2. Caregiver lead education
 - Counselling on decreasing identified exposure risks, cleaning practices, importance of follow-up blood lead tests
3. Improvement of nutrition
 - Caregiver nutritional counselling. Referral to WIC, SNAP, or other community food resources.
4. Medical follow-up care
 - Child with elevated BLL, follow-up testing to ensure BLL declining.
 - Testing for siblings or other at-risk children living in home.
5. Referrals and follow-up of other identified problems
 - Referral/follow-up for: medical services, developmental assessment, early intervention if developmental delays suspected or diagnosed, home visitation, head start, housing services, social services, transportation, legal services.

Statewide Contact	Local Public Health Department Contacts	
Nebraska Childhood Lead Poisoning Prevention Program 1-888-242-1100 (option 3) www.dhhs.ne.gov/lead	Douglas County: 402-444-7825 https://www.douglascountyhealth.co/lead-poisoning-prevention	In Greater Nebraska: Find LHD contact information at: www.dhhs.ne.gov/lhd

References:

CDC, 2021. Recommended Actions Based on Blood Lead Levels. <https://www.cdc.gov/nceh/lead/advisory/acclpp/actions-blls.htm>.

Pediatric Environmental Health Specialty Units, 2021. Management of Childhood Lead Exposure: https://www.pehsu.net/Lead_Exposure.html

AAP, 2016. Prevention of Childhood Lead Toxicity. Pediatrics. 2016;138(1):e20161493. <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/lead-exposure/>

National Toxicology Program. 2012. Monograph on Health Effects of Low-Level Lead. <https://www.niehs.nih.gov/health/topics/agents/lead/index.cfm>