Management of Lead Exposure during Breastfeeding

Guidance for Healthcare Providers in Washington State

Adapted from CDC Guidelines[1] ACOG Recommendations[2]

*Recommendations reflect the CDC's updated Blood Lead Reference Value[3] (≥ 3.5 µg/dL), where appropriate.

Key Takeaways:

- **Lead is excreted in human milk and can be harmful to breastfeeding infants.**
- **Screen breastfeeding persons for lead exposure risk factors.**
- **Obtain a blood lead level (BLL) if lead exposure risk factors are identified.**
- **Follow the medical management guidelines below if the BLL is ≥ 3.5 µg/dL.**
- **Breastfeeding with medical monitoring is recommended in most circumstances.**
- **Seek guidance from a lead specialist prior to making the recommendation to postpone or interrupt breastfeeding.**
- **Provide anticipatory guidance for avoiding lead exposure to all breastfeeding persons.**

Lead Exposure and Breastfeeding: Basics

- Lead is neurotoxic. Even small amounts of lead exposure in early life can cause adverse neurodevelopment effects, such as decreased IQ, learning and behavior problems, and reduced growth.
- Lead is excreted in human milk and breastfeeding people can transfer lead to their infant through breastmilk[4].
- Lead bioaccumulates and is stored primarily in bones where it can remain for decades as a source of endogenous exposure. Lead mobilization from bones increases during lactation[5].
- Initial maternal BLLs <20 µg/dL are unlikely to be associated with an increase in infant blood lead[1]. However, breastmilk can be a significant source of lead for some breastfed infants.
- Based on the current state of evidence, the known benefits of breastfeeding likely outweigh the potential risks from lead exposure in most cases where maternal BLLs are <40 µg/dL.
- Healthcare providers can prevent or mitigate harm to breastfeeding infants by:
    - evaluating all breastfeeding persons for lead exposure risk factors and performing blood lead testing if risk factors are identified
    - following recommended medical monitoring and management for BLLs ≥ 3.5* µg/dL
    - providing anticipatory guidance on preventing lead exposure

Identifying Risk Factors for Lead Exposure

Evaluate for lead exposure risk factors as early as possible in the clinical relationship. Exposure risks for lactating individuals differ from those for young children. Common risk factors include recent immigration or refugee status, pica behavior, occupational or hobby-related exposure, use of traditional medicines or cosmetics, consumption of supplements, spices, or foods obtained outside of the US, use of traditional lead glazed pottery, and nutritional status. Provide guidance on avoiding lead exposure from common sources to all breastfeeding people, regardless of identified risks.

Consider using the following screening questions:

- Were you born, or have you spent any time living, outside of the United States?
- Do you live in a home that was built before 1978? If so, in the last 12 months, has there been any renovation or repair work in your home?
- Has the drinking water at your home ever tested high (>15 ppb) for lead?
- During the past 12 months, have you used traditional medicines, homeopathic supplements, spices, foods/candies, ceramics, or cosmetics that were bought or shipped to you from outside of the US? (View the factsheet Traditional Sources of Lead in Immigrant Populations[6].)
- Sometimes pregnant individuals have the urge to eat things that are not food, such as clay, soil, plaster, or paint chips; this is called pica. Have you eaten, chewed on, or mouthed nonfood items in the past 12 months?
- Have you ever had a job or hobby that involved possible lead exposure? Some examples include home renovation, refinishing painted wood, fishing with leaded weights, ammunition, and working with stained glass, ceramics, or jewelry? (Go to the CDC webpage on lead in jobs and hobbies a more complete list.)
- During the past 12 months, have you eaten game meat that was hunted with lead bullets?
- Do you have any nonsurgical metal in your body, such as bullet fragments?

Blood Lead Testing

Most lead exposed individuals in the US will have no signs or symptoms of lead toxicity. Blood lead testing is the best way to identify an exposed person. The Centers for Disease Control (CDC) and American College of Obstetricians and Gynecologists (ACOG) recommend performing a blood lead test for breastfeeding persons who have risk factors for lead exposure[1,2]. The CDC recommends blood lead testing on all newly arrived refugees who are pregnant or breastfeeding[6]. Venous blood samples are recommended. If using capillary samples, BLLs ≥ 3.5 µg/dL should be verified by a venous BLL. Laboratories are required to report all blood lead test results in Washington state.

Medical Management of a Breastfeeding Person with BLLs ≥ 3.5 µg/dL *

Breastfeeding recommendations vary based on the maternal BLL. The benefits of breastfeeding are likely to outweigh the risks from potential lead exposure in most cases based on the current state of evidence. **We strongly advise consulting an expert prior to postponing or interrupting breastfeeding**. For guidance from a pediatric reproductive environmental health specialist, visit www.pehsu.net.

For Maternal BLL between 3.5* and 39 µg/dL

- Encourage the initiation of breastfeeding, according to parent's preference.
- Evaluate lead exposure sources and provide guidance to eliminate ongoing exposures. If the source is workplace-related, work with an occupational medicine specialist.
- Assess diet to ensure sufficient intake of iron, vitamin C, and calcium. Refer to the Women, Infants, and Children (WIC) Nutrition Program, as needed.
- Evaluate for iron deficiency. Provide appropriate nutritional advice and supplements if deficiency exists. Iron deficiency is associated with increased lead absorption.
- Prescribe calcium supplementation of 1,200 mg/daily to decrease bone resorption. Calcium supplementation has been associated with a 5–10% decrease in breast milk lead levels over the course of lactation[7].
- Perform follow-up testing on breastfeeding persons to assess risk for infant lead exposure based on initial (at time of birth or last measured) maternal BLL.

    - For a BLL of 3.5*– 19 µg/dL, test every 3 months, unless infant BLLs are rising or fail to decline.
    - For a BLL of 20 – 39 µg/dL, test 2 weeks postpartum and then at 1- to 3-month intervals depending on direction and magnitude of trend in infant BLLs test.
- Because decisions on when to conduct follow-up blood lead testing are impacted by the infant's BLL results, coordinate care with the infant's healthcare provider.

For Maternal BLL ≥ 40 µg/dL:

- Follow recommendations above, except advise the breastfeeding person to pump and discard breast milk until their BLL is below 40 µg/dL rather than initiating breastfeeding.
- Perform follow-up testing within 24 hours and then at frequent intervals depending on clinical interventions and trend in BLLs.
- Consult an expert (medical toxicologist or health care provider with experience managing lead poisoning) prior to making recommendations to postpone or interrupt breastfeeding and to determine a schedule for monitoring maternal and infant BLLs. **For immediate assistance, contact Poison Control 24/7 by phone at 1-800-222-1222**

Medical Management of a Breastfeeding Infants with BLLs ≥ 3.5*

An infant's BLL is influenced by prenatal and postnatal exposures. Maternal and infant BLLs are used as biomarkers to evaluate the infant's potential level of exposure from breastmilk. While lead can be measured in human milk for research purposes, there is no clinical test recommended for measuring lead levels in breastmilk. For more guidance or to request assistance for public health recommendations, visit www.doh.wa.gov/lead or inquire with the WA State Childhood Lead Poisoning Prevention Program by emailing lead@doh.wa.gov or calling (360) 236-4280.

- **For all infants with BLLs ≥ 3.5***, evaluate for non-milk sources of post-natal lead exposure and provide guidance on eliminating exposure. Environmental sources of lead exposure for newborns and infants may include:
    - use of imported traditional remedies or products such as kohl or surma
    - household members with occupational and recreational lead exposures
    - lead in jewelry, toys or other nonfood items that are touched, mouthed, or ingested
    - lead-based paint chips or dust from buildings constructed before 1978
    - lead contamination in drinking water used for reconstituted formula or food

- **For infant BLLs ≥ 5ug/dL**, refer the family to Early Support for Infants and Toddlers (ESIT), early intervention services for children from birth to 3 years of age.

- **For infant BLLs of 20-44 ug/dL**, consider an abdominal Xray if it is possible the infant swallowed a non-food item. Encourage continuation of breastfeeding, unless ALL of the following are true
    - maternal BLL is ≥ 20 µg/dL
    - infant BLL is ≥ 5 µg/dL and is rising or fails to decline on follow-up tests (Table 1)
    - no potential sources of lead exposure other than human milk are identified

- **If an infant's BLL is ≥ 45 µg/dL**, consult an expert experience treating lead poisoning to initiate chelation therapy. If the infant exhibits symptoms of acute lead poisoning, including confusion, weakness, seizures, coma, nausea, vomiting, and abdominal pain, immediate medical attention is warranted. **For immediate assistance, contact Poison Control 24/7 by phone at 1-800-222-1222.**

Table 1. Recommended Schedule for Follow-up Blood Lead Testing in Infants[9]

Note: Where there is a range, select based on direction and magnitude of trend in infant and maternal BLLs.

BLL (µg/dL)	Early follow up interval testing (2–4 tests after initial test)	Later follow up testing after BLL declining
< 3.5	Routine testing	Blood lead testing at 12 and 24 months is required for children enrolled in Medicaid and recommended for children risk factors.
≥3.5–9	Every 3 months	6–9 months
10–19	Every 1–3 months	3–6 months
20–44	Every 2 weeks–1 month	1–3 months
≥45	Within 24 hours	As directed by the healthcare provider managing chelation.

Resources for Patients

- Print and share **Blood Lead Levels in Pregnant & Breastfeeding Moms** from American Academy of Pediatrics' HealthyChildren.org webpage in English and Spanish.
- Direct parents to visit **doh.wa.gov/lead** or call 360-236-4280 (for toll free, 1-800-909-9898**)** for information about lead, like where lead can be found.
- Encourage parents to call the **Help Me Grow WA Hotline** at 1-800-322-2588 to see if they are eligible for **Women, Infants, and Children (WIC) Nutrition or Breastfeeding Support** programs, or to get a referral to their local **ESIT** service provider.

References and Clinical Resources for Healthcare Professionals

1. **Guidelines for the identification and management of lead exposure in pregnant and lactating women.** CDC, 2010.
2. **Lead Screening During Pregnancy and Lactation.** American College of Obstetrics and Gynecology (ACOG): Committee on Obstetrics Practice, 2016. Reaffirmed 2023.
3. **CDC Updates Blood Lead Reference Value | Childhood Lead Poisoning Prevention.** CDC, 2024. Accessed July 1, 2024.
4. Ettinger, A, et al. **Maternal Blood, Plasma, and Breast Milk Lead: Lactational Transfer and Contribution to Infant Exposure**. Environmental Health Perspectives. 122:87-92. 2014.
5. Gulson, B., Taylor, A., and Eisman, J**. Bone remodeling during pregnancy and post-partum assessed by metal lead levels and isotopic concentrations.** Bone. 89: 40-51. 2016.
6. **Lead: Refugee Health Domestic Guidance.** CDC. 2024. Accessed June 27, 2025.
7. **Traditional Sources of Lead Exposures in Immigrant Populations.** Northwest Pediatric Environmental Health Specialty Unit. 2018.
8. Ettinger AS, Hu H, Hernandez-Avila M. **Dietary calcium supplementation to lower blood lead levels in pregnancy and lactation.** J Nutr Biochem. 2007 Mar;18(3):172-8. doi: 10.1016/j.jnutbio.2006.12.007. PMID: 17296490; PMCID: PMC2566736.
9. **Recommended Actions Based on Blood Lead Level**. CDC. March 21, 2025.

Acknowledgments: M. Willis, RN BSN, MPH; M. Cardon, DNP, PNP-PC; C. Karr, MD, PhD, MS. Last Reviewed June 2025.

The creation of this resource was supported by funding from the Washington State Department of Health. NW PEHSU is supported by cooperative agreement FAIN: NU61TS000356 from the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry (CDC/ATSDR) totaling $3,673,450.00 with 73% funded by CDC/ATSDR. The U.S. Environmental Protection Agency (EPA) provided the remaining support through Inter-Agency Agreement 24TSS2400078 with CDC/ATSDR. The Public Health Institute supports the Pediatric Environmental Health Specialty Units as the National Program Office. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/ATSDR, EPA, or the U.S. Government. Use of trade names that may be mentioned is for identification only and does not imply endorsement by the CDC/ATSDR or EPA.

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