Management of Lead Exposure During Pregnancy:

Guidance for Healthcare Providers in Washington State

Adapted from CDC[1] and ACOG[2] Guidance

Note: Recommendations reflect CDC's updated Blood Lead Reference Value (BLRV) of 3.5 µg/dL[3].

Key Takeaways:

- Lead readily crosses the placenta and adversely affects both maternal and fetal health.
- Bone lead stores acquired from past exposure are mobilized during pregnancy.
- Evaluate *all* individuals for lead exposure risk factors as early as possible in their pregnancy.
- Obtain a blood lead level (BLL) on pregnant individuals with lead exposure risk factors.
- Follow medical management guidelines outlined below if maternal BLL is ≥ 3.5 µg/dL.
- Document both the parental BLL and the newborn BLL in medical records to ensure appropriate follow-up.
- Provide anticipatory guidance on steps to prevent exposure to all pregnant individuals.

Lead Exposure During Pregnancy: The Basics

- Lead readily crosses the placenta by passive diffusion. Cord blood lead levels are strongly correlated to maternal blood lead levels.
- Lead is neurotoxic. Prenatal and early childhood lead exposure is associated with decreased IQ, learning and behavior problems, and reduced growth.
- Elevated maternal BLLs are associated with an increased risk for gestational hypertension, spontaneous abortion, and preterm delivery.
- Lead from high or chronic exposure is stored primarily (90%) in bones, where it can remain for up to 30 years. Such stores may cause increasing maternal BLLs in the third trimester and through the postpartum period due to increased mobilization of lead from bones.[4]
- Healthcare providers can prevent or mitigate harm to pregnant individuals, infants, and children by:
    - Evaluating individuals who are pregnant or trying to conceive for lead exposure risk factors
    - Performing blood lead testing on individuals for whom risk factors are identified
    - Following recommended medical management for individuals with BLL ≥ 3.5 µg/dL
    - Providing education on preventing lead exposures

Identifying Risk Factors for Lead Exposure

Most exposed individuals will show no signs of symptoms at levels that can cause harm to both the pregnant individual and the developing fetus. Evaluate pregnant individuals for lead exposure risk factors as early as possible in the clinical relationship. Risk factors for adults 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. Reassess for new risk factors, such as home renovations or use of traditional medicines, throughout pregnancy and postpartum.

Consider the following screening questions:

- Were you born, or have you lived, in a country outside of the United States?
- Have you or someone you lived with ever had a blood level equal to or above 3.5 ug/dL?
- 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 your drinking water ever tested high (> 15 parts per billion) for lead?
- During the past 12 months, have you used any of the following products that were bought or shipped to you from a country outside of the US: health remedies (like traditional folk remedies), homeopathic medicines or supplements, spices, foods, candies, ceramics, aluminum cookware, or cosmetics? (View the factsheet Traditional Sources of Lead in Immigrant Populations.[5])
- 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 during your pregnancy?
- Have you ever had a job or hobby that involved possible lead exposure? Some examples include home renovation/construction, refinishing painted wood, fishing, hunting, or working with glass, ceramics, or jewelry. (Go to CDC's lead prevention website for 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 retained bullet fragments?

Blood Lead Testing

The Centers for Disease Control and Prevention (CDC) and the American College of Obstetricians and Gynecologists (ACOG) recommend performing a blood lead test on pregnant individuals who have risk factors for lead exposure[1,2]. The CDC recommends blood lead testing for all newly arrived refugees who are pregnant or breastfeeding[6]. Venous blood samples are the gold-standard for blood lead testing. A capillary sample BLL ≥ 3.5 µg/dL should be confirmed with a venous BLL. In Washington, laboratories must report all blood lead test results to the Washington State Department of Health.

Medical Management of Lead Exposure During Pregnancy

For a BLL < 3.5 µg/dL

Provide anticipatory guidance on steps to prevent exposure to lead, including:

- Never consume or mouth nonfood items, such as clay, soil, pottery, or paint chips, because they may be contaminated with lead.
- Take steps to prevent exposure if doing jobs or hobbies that may involve lead. Take precautions to avoid lead contamination if a household member works with lead.
- Avoid using imported lead-glazed ceramic pottery, pewter, brass, or leaded crystal to cook, serve, or store food. Do not use dishes that are chipped or cracked.
- Avoid participating in repair, repainting, renovation, and remodeling work in homes built before 1978 to avoid exposure to lead-contaminated dust. Take precautions to avoid potentially contaminated dust and deteriorated lead-based paint.
- Avoid cosmetics, food additives, and medicines imported internationally that may contain lead, such as azarcon, kohl, kajal, surma, and many others.

- Use caution when consuming candies, spices, and other foods that have been imported directly or brought into the country by travelers from abroad.
- Eat a balanced diet with an adequate intake of iron, vitamin C and calcium to protect against lead.

For a BLL ≥ 3.5-14 µg/dL

Provide anticipatory guidance described above PLUS:

- Identify potential sources of lead exposure and provide guidance on eliminating ongoing exposures. Consider consulting an environmental health specialist for help identify potential lead hazards (Northwest PEHSU, pehsu@uw.edu or 1-206-221-8671) if the source is not obvious.
- Repeat venous BLL within 1 month. Consider continued interval testing to ensure the level is declining.
- Optimize nutrition, balanced diet, and prenatal vitamins.
    - Assess for adequate dietary intake of calcium, iron, zinc, and vitamins C, D, and E.
    - Prescribe calcium supplementation of 1,200 mg/day. Calcium supplementation has been associated with a decrease in maternal blood lead levels over the course of pregnancy[7].
    - Evaluate iron status and treat deficiency accordingly. Iron deficiency increases lead absorption.
    - Refer those in need of nutrition assistance programs (i.e. WIC, SNAP).
- At delivery, obtain a cord BLL or a maternal BLL.
- Inform the newborn's healthcare provider of maternal or cord BLL, so they may document it in the newborn's medical record and provide ongoing monitoring for the infant.
- If the suspected source of lead exposure is occupational, refer the patient to an Occupational Health Specialist. The Association of Occupational and Environmental Clinics offers a list of providers.

BLL ≥ 15-44 µg/dL

ALL OF THE ABOVE PLUS:

- Repeat venous BLL within 1 month.
- After the initial follow-up venous BLL, re-test every 2-3 months until below 15 µg/dL. For BLL > 25 µg/dL, repeat every 1 month.
- For additional guidance, speak to a NW PEHSU environmental health specialist.

BLLs ≥45 µg/dL

ALL OF THE ABOVE PLUS:

- Treat as a high-risk pregnancy and consult with an expert in lead poisoning and chelation**.** For help locating an expert, contact the Poison Control Center at 1 (800) 222-1222.
- Refer patient to a Maternal-Fetal Medicine Specialist.
- Repeat venous BLL within 24 hours, and then at frequent intervals as advised by specialists.

Note: Chelation may be warranted in cases with acute symptoms, such as lead encephalopathy, regardless of the BLL

Resources for Patients

Are You Pregnant? CDC webpage available in English and Spanish.

Blood Lead Levels in Pregnant & Breastfeeding Moms. American Academy of Pediatrics' HealthyChildren.org webpage available in English and Spanish.

Help Me Grow WA Hotline at 1-800-322-2588 or Washington Department of Health's **Women, Infants, and Children (WIC) Nutrition program's website** for information on nutritional support programs during pregnancy.

Washington State Department of Health's Lead Program webpage or phone line **(360-236-4280)** for general information on lead sources and preventing exposures.

Factsheets, References, and Clinical Resources for Healthcare Providers

1. Guidelines for the identification and management of lead exposure in pregnant and lactating women. Centers for Diseases Control. 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. Centers for Diseases Control. 2024. Accessed June 27, 2025.
4. Gulson, B., Taylor, A., and Eisman, J. Bone remodeling during pregnancy and post-partum assessed by metal lead levels and isotopic concentrations. *Bone*. 2016; 89: 40-51. doi: 10.1016/j.bone.2016.05.005.
5. Traditional Sources of Lead Exposures in Immigrant Populations. Northwest Pediatric Environmental Health Specialty Unit. 2018.
6. Lead: Refugee Health Domestic Guidance. Centers for Diseases Control. 2024. Accessed June 27, 2025.
7. 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.

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

The creation of this resource was supported by funding from the Washington State Department of Health. NWPESHU 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.

Updated June 2025

Washington State Department of HEALTH

Northwest PEHSU Pediatric Environmental Health Specialty Units