



National Center for HEALTHY HOUSING

Childhood Lead Poisoning

What Local Government Should Know About the Blood Lead Reference Value

What is the Centers for Disease Control and Prevention's blood lead reference value (BLRV)?

The **blood lead reference value** (BLRV) is a policy tool that is used to identify children with higher lead in their blood compared to most children. It is based on the 97.5th percentile of blood lead levels in children in the United States. A child having a blood lead level above the BLRV means that child has a blood lead level above most children in the U.S. The current BLRV is 3.5 micrograms per deciliter ($\mu\text{g}/\text{dL}$).

The BLRV is *not* an enforceable mandate; therefore, action levels may vary between states or the state and local government. The updated BLRV creates an opportunity for early identification and referral to appropriate medical and environmental services for children with blood lead levels higher than most children's levels.

When did the blood reference value change? Will it change again?

The BLRV for children was lowered from 5 $\mu\text{g}/\text{dL}$ to 3.5 $\mu\text{g}/\text{dL}$ by the Centers for Disease Control and Prevention in October 2021. The BLRV is based on data from the **National Health and Nutrition Examination Survey** (NHANES). CDC studies data from the two most recent cycles of this survey every four years and can decide whether to update the reference value. The BLRV may continue to decrease (if NHANES data changes and CDC decides to lower the BLRV again) but will never increase.

Who is at increased risk for lead exposure?

Lead is a serious environmental justice issue that disproportionately impacts children in low-income communities and communities of color. About half a million children—the equivalent of 24,000 kindergarten classrooms full of kids—are needlessly exposed to lead in the United States. **Black children** are at an increased risk of lead exposure and are more likely to be exposed to lead paint and lead dust in homes.

Children are more vulnerable to lead exposure due to their rapidly developing bodies and are more susceptible to absorbing lead if exposed. Also, young children tend to put objects in their mouths, which puts them at higher risk of lead exposure. Others who are at increased risk for lead exposure include pregnant and breastfeeding women and children who are immigrants and refugees. Adults with occupations or hobbies (such as hunting, welding, or mining) that expose them to lead can be at risk both of lead exposure themselves and also of bringing lead home (such as through lead-contaminated clothes).

What does the change in BLRV mean for local governments?

The change in BLRV is a continuation of the significant progress that has been made over the last 40 years in reducing blood lead levels in the United States. The goal is to continue to get levels as low as possible in keeping with our understanding that there is no safe level of lead exposure. The lowered BLRV means that efforts to address lead poisoning have been effective, especially at reducing very high levels of exposure, but that there is more work to be done.

As discussed below, when local governments choose to adjust action levels to match the lowered BLRV, it may mean that more children are identified with higher blood lead levels (BLLs)¹ at the local and state levels, which can result in increased caseloads. However, the updated BLRV is also an opportunity for investments in policies, programs, and funding in communities where children are disproportionately affected by higher blood lead levels and to intervene earlier when children are exposed.

¹ May also be referred to as "elevated blood lead levels" (EBLLs).

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What States Should Know About the Blood Lead Reference Value

What does the change mean...?
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Federal programs that provide funding to state programs may also adjust policies in response to the updated BLRV. Additional detail about the local government's role is addressed in the next section.

What is the role of local government in this change?

The BLRV is not a regulatory standard. States can independently decide whether to implement action levels to signify a higher blood lead levels and motivate interventions, and when or whether to adjust those thresholds if the BLRV changes. Local governments should be informed of their state's requirements when updating local-level lead interventions.

Many states use the BLRV as a guide for setting action levels. Adopting new action levels to match the change in BLRV may increase caseloads for state and local health departments. Local public health departments should prepare for this impact and work with state government on implementation, which should include strategies to triage children at various BLLs and messages to communicate to parents. Even if a state's action level is higher than 3.5 µg/dL, lab tests will still tell a parent that their child has higher lead levels.

The role of public health departments is to support pediatric providers with messages to communicate to parents. Public health and clinical professionals should use local data to develop testing plans that will target local conditions. Data can be used to focus interventions and services to the most vulnerable populations within the community.

What strategies can be used to reduce lead exposure?

The first step in reducing lead exposure is to be aware of the sources of lead. Lead can be found in a variety of sources in a child's environment including deteriorating lead paint and dust (often found in older housing, as lead paint was banned in the United States in 1978), drinking water (often due to lead service lines and some plumbing fixtures), soil, food, cosmetics, medicines, and other consumer products, such as toys and jewelry. Additionally, some jobs or hobbies may involve exposure to lead (including opportunities to inadvertently take lead home on clothes, shoes, or work materials). Gas used by small aircraft still contains lead. Lead particles can contaminate air and settle in the soil, causing a particular risk to those who live near airports or in areas in areas where piston-engine aircraft are serviced or fly regularly.

Reducing or permanently removing sources of lead before kids are exposed is a primary prevention strategy to reduce lead exposure and prevent children from being harmed. Some sources of lead, including paint and water, are actionable at the state or local levels, and there are recommended policy actions these agencies can pursue. Other sources, such as food and consumer products, may be less actionable or more challenging for states and localities to address via policy or regulatory change, but local governments can still work to address these sources, including through community outreach and education and partnerships with federal agencies.

As a secondary prevention strategy, local government can work to support and increase blood lead testing in children and support services to children who have been identified with higher blood lead levels, including through remediating or removing the source(s) of lead exposure and providing services to support children with educational or behavioral challenges caused or exacerbated by lead exposure. The local government can provide informational materials to educate parents and healthcare professionals about the BLRV and the significance of keeping appointments for follow-up care and referral services.

Actions that local governments can take to implement both secondary and primary prevention strategies are described in the following table. Partnering with a diverse set of federal, state, and local agencies and programs will be important for most of these actions; important partners may include but are not limited to faith-based organizations, refugee organizations, public housing authorities, water utilities, building/housing departments and code enforcement programs, physicians, legal aid and tenant advocate programs, landlords, educators, environmental justice programs at the state and local levels, healthy homes programs at the state and local level, the U.S. Environmental Protection Agency (EPA), U.S. Department of Housing and Urban Development (HUD), CDC, and Pediatric Environmental Health Specialty Units (PEHSU).

Make a Plan to Prevent Lead Exposure, Reduce Higher Blood Lead Levels in Children, and Provide Follow-Up Services to Children Exposed to Lead

| SUGGESTED ACTION FOR LOCAL GOVERNMENT TO REDUCE AND PREVENT BLOOD LEAD LEVELS IN CHILDREN | RESOURCES AND BEST PRACTICES | THIS CAN HELP WITH... | |
|---|---|-----------------------|----------------------|
| | | PRIMARY PREVENTION | SECONDARY PREVENTION |
| PROVIDE RESOURCES TO REMOVE LEAD HAZARDS, INCLUDING: | | | |
| Seek funding from HUD and other agencies to remove lead hazards in residential environments both proactively and as part of a blood lead levels investigation and response. | Explore the National Center for Healthy Housing list of financing and funding programs, opportunities, and examples. Explore grants available through HUD's Office of Lead Hazard Control and Healthy Homes . | ● | ● |
| Work with water utilities/authorities to take advantage of funding opportunities to remove lead service lines. | Review the Lead Service Line Replacement Collaborative's information on funding replacement of lead service lines . | ● | ● |
| Include remediation of lead and other environmental hazards as eligible expenses of home repair programs. | Review the Establishing and Running a Local Home Repair Program technical assistance tool for information on how local home repair programs can address healthy housing issues. | ● | ● |
| USE DATA TO TARGET RESOURCES. | | | |
| Use data to develop testing plans and focus testing efforts to identify houses at risk, kids at risk, and kids who may have already been exposed. | Explore a predictive model that identifies houses of children at risk developed by the Chicago Department of Public Health (CDPH) through a partnership with the University of Chicago's Center for Data Science and Public Policy. | ● | ● |
| Use local data to identify communities with high lead exposure and use resources to improve their health outcomes. | Use the Lead Service Line Replacement Collaborative's guide to Equity Tools and Data Sources for information on data that may be available in your community. | ● | ● |
| Use data to support funding needs. Work with other environmental justice programs and initiatives to focus lead remediation funding and resources in highest-need communities. | | ● | ● |
| Make data on lead hazards and high-risk areas publicly available. To be effective, data should be as current as possible and provided at the finest geographic resolution possible. | Explore how the Allegheny County Health Department uses the Pennsylvania National Electronic Disease Surveillance System to monitor and publish data on testing and higher blood lead levels. The Allegheny County maps provide data at the census tract and school-level and for the municipalities and neighborhoods of Pittsburgh. | ● | ● |
| COLLABORATE WITH DIVERSE AGENCIES AND SECTORS TO ADDRESS LEAD HAZARDS. | | | |
| Collaborate with code enforcement officials to identify and improve codes that pertain to lead hazards in housing. | Use the Lead Legal Strategies Partnership's technical assistance tool to learn about opportunities to strengthen local housing codes for lead poisoning prevention. | ● | |
| Implement proactive rental inspection (PRI) policies. | Explore these resources on PRI and how it can support healthy homes on the National Center for Healthy Housing website. | ● | |
| Explore funding options to support inspection costs. | Explore this resource from Earthjustice that includes information on determining how much PRI programs may cost. | ● | |
| Collaborate with local water utilities on lead hazard reduction activities, such as lead service line replacements. | Visit the EPA's Safe Drinking Water Information Systems (SDWIS) to search for public water systems. | ● | |
| Incorporate Repair, Renovation, and Painting rule provisions into regular permitting processes. | Review examples of how localities can strengthen their practices around RRP here . | ● | |

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Make a Plan to Prevent Lead Exposure, Reduce Higher Blood Lead Levels in Children, and Provide Follow-Up Services to Children Exposed to Lead

| SUGGESTED ACTION FOR STATE HEALTH DEPARTMENTS TO REDUCE AND PREVENT BLOOD LEAD LEVELS IN CHILDREN | RESOURCES AND BEST PRACTICES | THIS CAN HELP WITH... | |
|---|---|-----------------------|----------------------|
| | | PRIMARY PREVENTION | SECONDARY PREVENTION |
| COLLABORATE WITH DIVERSE AGENCIES AND SECTORS TO ADDRESS LEAD HAZARDS. (CONTINUED) | | | |
| Develop strategic education campaigns for healthcare providers and parents. | Review <i>Childhood Lead Poisoning: What You Should Know About Your Child's Blood Test Results</i> for information to share with parents. | ● | ● |
| Collaborate with local childcare providers to identify and fix sources of lead. | Review the <i>Lead-Safe Toolkit for Center-Based Child Care</i> for resources and strategies to ensure the safety of child care facilities. | ● | |
| Collaborate with other environmental justice programs and initiatives to focus lead remediation funding and resources in highest-need communities. | Review <i>EPA's environmental justice web page</i> for funding and technical assistance opportunities. | | ● |
| LEVERAGE EXISTING SYSTEMS AND REQUIREMENTS TO INCREASE BLOOD LEAD TESTING. | | | |
| Require proof that a child has received a blood lead test for enrollment into school, including for childcare, preschool, and kindergarten. | The <i>Iowa Department of Public Health (IDPH)</i> requires blood lead testing for students enrolled in kindergarten. Review the list of other states that require blood lead testing at <i>Toxic-Free Future</i> . | | ● |
| Ensure that children who receive Medicaid receive lead testing at 12 and 24 months of age (which is a federal requirement). | Collaborate with Medicaid to target outreach and education to children who have not received Medicaid required blood lead screenings. <i>States such as Wisconsin and New York</i> have implemented strategies to collaborate with Medicaid to improve targeted screenings. | | ● |
| PROVIDE OUTREACH AND EDUCATION ABOUT THE IMPORTANCE OF LEAD TO PARENTS AND PHYSICIANS. | | | |
| Provide training to physicians, including through partnerships with physician networks and organizations, on the importance of blood lead testing, sources of lead exposure, and resources available to fix lead hazards. | Texas Health Steps offers online lead screening and prevention courses to physicians; view a list of courses on the <i>Texas Health and Human Services website</i> . CDC has a set of <i>information and resources for healthcare providers here</i> . | | ● |
| Provide education to parents on the importance of blood lead testing, sources of lead exposure, and resources available to fix lead hazards. | The <i>Healthy Homes Ready by Five Program's web page</i> provides parents in Kent County, Michigan, with educational, prevention, and intervention services for environmental hazards in the home, including lead. | | ● |
| Encourage parents and guardians to make and keep follow-up appointments, including: | <i>Help parents understand</i> the importance of blood lead testing and follow-up appointments. | | ● |
| Follow-up testing to ensure the blood lead level is declining. | | | ● |
| Blood lead level testing for other children living in the home. | | | ● |

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If you're a parent or state health department looking for more on what you should know about the BLRV, please visit our companion resources at:

bit.ly/Facts_CLP_En
bit.ly/Facts_CLPstateBLRV

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|---|---|-----------------------|----------------------|
| | | PRIMARY PREVENTION | SECONDARY PREVENTION |
| CREATE PARTNERSHIPS AND PROVIDE REFERRALS, INCLUDING: | | | |
| Partnerships and referrals to nutritional counselling, WIC, SNAP, and other food resources. | Learn how the Louisiana Healthy Homes and Childhood Lead Poisoning Prevention Program collaborated with a WIC clinic in the New Orleans area to offer a piloted blood lead testing program. | | ● |
| Partnerships and referrals for children with higher blood lead levels, such as: <ul style="list-style-type: none"> • Developmental assessment • Early intervention if developmental delays are suspected or diagnosed • Home visitation • Head Start. | Explore state-level partnerships with early intervention and education. The Tennessee Childhood Lead Poisoning Prevention Program (TN CLPPP) established a partnership with the Tennessee Early Intervention System (TESI) that allows the TN CLPPP to refer children with high blood lead levels to early intervention services. The Oregon Childhood Lead Poisoning Prevention Program (OCLPPP) partners with the Oregon Department of Education to determine the best strategy for identifying eligible children and educate families on referrals to early intervention services. CDC's resource Educational Interventions for Children Affected by Lead includes information on the effectiveness of early childhood education programs, applicable federal programs, and services available for lead-exposed children (Chapter 5, Appendix 3). The resource also shows the proven benefit that Head Start programs have for children with disabilities. Best Practices for Working with Young Children with Elevated Blood Lead Levels is a guide that informs and supports early intervention and home visitation professionals in assisting children who have been exposed to lead. | | ● |
| Partnerships and referrals to additional services, such as: <ul style="list-style-type: none"> • Housing services • Social services • Transportation • Legal services. | North Carolina developed a statewide coordinated care network, NCCARE360 , which connects residents to community resources. Maximizing the NCCARE360 Network to Advance the Public's Health is a referral guide for local health departments in North Carolina. The Guide to Health and Social Services , from the Georgia Department of Human Services, is a guide to health and social services such as food assistance, legal, and shelter. | | ● |
| CREATE PARTNERSHIPS WITH SCHOOLS AND SCHOOL DISTRICTS. | | | |
| Work with your state's department of education to offer services and resources for children with a history of higher blood lead levels. | Review CDC's Educational Interventions for Children Affected by Lead for information on the effective of early childhood education programs including the role schools can play in early interventions. The Connecticut State Department of Education developed Education Guidelines for the Prevention and Management of Lead Poisoning in Children to help schools understand their role in meeting the needs of children affected by lead exposure. This resource provides steps that schools can take to aid primary prevention and early intervention. The law article, Elevated Blood Lead Levels as Eligibility Criteria for Early Intervention Programs , describes how lead exposure intersects with eligibility criteria for early intervention programs and how Ohio, New York, Indiana, and Pennsylvania created state legislation to implement early intervention programs. | | ● |

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| | | PRIMARY PREVENTION | SECONDARY PREVENTION |
| CREATE PARTNERSHIPS WITH SCHOOLS AND SCHOOL DISTRICTS. (CONTINUED) | | | |
| Work with schools to understand and use your county data and maps on blood lead levels. Teach schools and the department of education how to use the maps to understand trends in the state and in specific communities. | Explore how the Wisconsin Childhood Lead Poisoning Prevention Program uses data to identify communities at risk. Wisconsin's Data Explorer Map provides census tract-level data for children under the age of 6. New Jersey and Ohio have both developed maps showing address-level data of homes with known lead hazards or that have potential sources of lead exposure. | | |
| Provide education about lead poisoning to administrators, teachers, and school nurses. | Review this resource from New York State for an example of the type of blood lead level information that school nurses may have access to. The Connecticut State Department of Education website provides a list of professional development opportunities for educators, which can serve as an example for other states. | | ● |

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