



# National Center for HEALTHY HOUSING

## Childhood Lead Poisoning What States 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 states?

The change in the 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 states choose to adjust action levels to match the lowered BLRV, it may mean that more children are identified with higher blood lead levels (BLLs)<sup>1</sup> 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

<sup>1</sup> 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...? *(continued)*

where children are disproportionately affected by higher blood lead levels and to intervene earlier when children are exposed.

Federal programs that provide funding to state programs may also adjust policies in response to the updated BLRV. Additional detail about the state's role is addressed in the next section.

## What is a state's role 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 level and motivate interventions, and when or whether to adjust those thresholds if the BLRV changes. The National Center for Healthy Housing has curated [a list of state blood lead levels](#) for triggering public health action and providing case management and environmental investigations.

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. It is the state's role to assist local government with understanding how this change will affect their caseloads. Additionally, it is the state's role to provide guidance to local government on how to triage children at various BLLs and on 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 state's role 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 state.

## 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 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 states can still work to address these sources, including through community outreach and education and partnerships with federal agencies.

As a secondary prevention strategy, states 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.

Actions that state 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 the U.S. Environmental Protection Agency (EPA), U.S. Department of Housing and Urban Development (HUD), CDC, Pediatric Environmental Health Specialty Units (PEHSU), environmental justice programs at the state and local levels, healthy homes programs at the state and local level, public housing authorities, water utilities, building/housing departments and code enforcement programs, physicians, legal aid and tenant advocate programs, landlords, and educators.

# 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
<b>PROVIDE RESOURCES TO REMOVE LEAD HAZARDS, INCLUDING:</b>			
Provide funding to localities to remove lead hazards in residential environments both proactively and as part of a blood lead level investigation and response.	Explore the <a href="#">National Center for Healthy Housing list</a> of financing and funding programs, opportunities, and examples. Help localities explore grants available through HUD's <a href="#">Office of Lead Hazard Control and Healthy Homes</a> .	●	●
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 <a href="#">funding replacement of lead service lines</a> .	●	●
<b>USE DATA TO TARGET RESOURCES.</b>			
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 how the <a href="#">Wisconsin Childhood Lead Poisoning Prevention Program</a> uses data to identify communities at risk.	●	●
Use 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 <a href="#">Equity Tools and Data Sources</a> 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 <a href="#">Wisconsin Childhood Lead Poisoning Prevention Program</a> uses data to identify communities at risk. Wisconsin's Data Explorer Map provides census-tract-level data for children under the age of 6.  <a href="#">New Jersey</a> and <a href="#">Ohio</a> have both developed maps showing address-level data of homes with known lead hazards or that have potential sources of lead exposure.	●	●
<b>COLLABORATE WITH DIVERSE AGENCIES AND SECTORS TO ADDRESS LEAD HAZARDS.</b>			
Support localities in working with code enforcement officials to identify and improve codes that pertain to lead hazards in housing.	Use the <a href="#">Lead Legal Strategies Partnership's technical assistance tool</a> to learn about opportunities to strengthen local housing codes for lead poisoning prevention.	●	
Support localities in implementing proactive rental inspection (PRI) policies.	Explore <a href="#">these resources on PRI</a> and how it can support healthy homes on the National Center for Healthy Housing website.	●	
Provide funding for localities to support inspection costs.	Explore <a href="#">this resource</a> from Earthjustice that includes information on determining how much PRI programs may cost.	●	
Remove (or support localities in working around) barriers to implementing local regulations, such as preemption.	Read about preemption, and how it relates to public health, in <a href="#">these resources</a> from ChangeLab Solutions.	●	
Collaborate with water utilities on lead hazard reduction activities such as lead service line replacements.	Visit the EPA's <a href="#">Safe Drinking Water Information Systems (SDWIS)</a> to search for public water systems.	●	
Adopt state enforcement of the Repair, Renovation, and Painting rule and/or encourage localities in the state to embed RRP into its regular permitting process.	View the <a href="#">list of states that have adopted the RRP rule</a> on the National Center for Healthy Housing website and read <a href="#">about the adoption process</a> on the Better Lead Policy website.  See examples of how localities can strengthen their practices around RRP <a href="#">here</a> .	●	

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		PRIMARY PREVENTION	SECONDARY PREVENTION
<b>LEVERAGE EXISTING SYSTEMS AND REQUIREMENTS TO INCREASE BLOOD LEAD TESTING.</b>			
Require proof that a child has received a blood lead test for enrollment into school, including for childcare, preschool, and kindergarten.	The <a href="#">Iowa Department of Public Health (IDPH)</a> requires blood lead testing for students enrolled in kindergarten. Review the list of other states that require blood lead testing at <a href="#">Toxic-Free Future</a> .		●
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. <a href="#">States such as Wisconsin and New York</a> have implemented strategies to collaborate with Medicaid to improve targeted screenings.		●
Institute state recommendations or requirements for blood lead screening in all children, not just high-risk groups or those on Medicaid.	Review the <a href="#">State Health Department Policies for Children with Elevated Blood Lead Levels table</a> for testing recommendations and requirements by state.		●
<b>PROVIDE OUTREACH AND EDUCATION ABOUT THE IMPORTANCE OF LEAD TO PARENTS AND PHYSICIANS.</b>			
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 <a href="#">Texas Health and Human Services website</a> . CDC has a set of <a href="#">information and resources for healthcare providers here</a> .		●
Encourage parents and guardians to make and keep follow-up appointments, including:	Help parents understand 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.			●
<b>CREATE PARTNERSHIPS AND PROVIDE REFERRALS, INCLUDING:</b>			
Partnerships and referrals to nutritional counselling, WIC, SNAP, and other food resources.	Learn how the <a href="#">Louisiana Healthy Homes and Childhood Lead Poisoning Prevention Program</a> 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"> <li>• Developmental assessment</li> <li>• Early intervention if developmental delays are suspected or diagnosed</li> <li>• Home visitation</li> <li>• Head Start.</li> </ul> Encourage local health departments to have partnerships with programs that assist children with higher blood lead levels.	Explore state-level partnerships with early intervention and education. The <a href="#">Tennessee Childhood Lead Poisoning Prevention Program (TN CLPPP)</a> established a partnership with the Tennessee Early Intervention System (TESI) that allows TN CLPPP to refer children with high blood lead levels to early intervention services. The <a href="#">Oregon Childhood Lead Poisoning Prevention Program (OCLPPP)</a> 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 <a href="#">Educational Interventions for Children Affected by Lead</a> 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.  <a href="#">Best Practices for Working with Young Children with Elevated Blood Lead Levels</a> is a guide that informs and supports early intervention and home visitation professionals in assisting children who have been exposed to lead.		●

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		PRIMARY PREVENTION	SECONDARY PREVENTION
<b>CREATE PARTNERSHIPS WITH SCHOOLS AND DEPARTMENTS OF EDUCATION.</b>			
Work with your state's department of education to offer services and resources for children with a history of higher blood lead levels.	<p>Review CDC's <i>Educational Interventions for Children Affected by Lead</i> for information on the effective of early childhood education programs including the role schools can play in early interventions.</p> <p>The Connecticut State Department of Education developed <i>Education Guidelines for the Prevention and Management of Lead Poisoning in Children</i> 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.</p> <p>The law article, <i>Elevated Blood Lead Levels as Eligibility Criteria for Early Intervention Programs</i>, 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.</p>		●
Work with schools to understand and use your state 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.	<p>Explore how the <i>Wisconsin Childhood Lead Poisoning Prevention Program</i> uses data to identify communities at risk. Wisconsin's Data Explorer Map provides census tract-level data for children under the age of 6.</p> <p><i>New Jersey</i> and <i>Ohio</i> have both developed maps showing address-level data of homes with known lead hazards or that have potential sources of lead exposure.</p>		●
Provide education about lead poisoning to administrators, teachers, and school nurses.	<p>Review <a href="#">this resource from New York State</a> for an example of the type of blood lead level information that school nurses may have access to.</p> <p>The <a href="#">Connecticut State Department of Education website</a> provides a list of professional development opportunities for educators, which can serve as an example for other states.</p>		●

*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](https://bit.ly/Facts_CLP_En)**  
**[bit.ly/Facts\\_CLPstateBLRV](https://bit.ly/Facts_CLPstateBLRV)**

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