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Blood Lead Reference Value

CDC uses a blood lead reference value (BLRV) of 3.5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) to identify children with blood lead levels that are higher than most children's levels.

CDC's Blood Lead Reference Value

In 2012, the Centers for Disease Control and Prevention (CDC) introduced a blood lead "reference value" to identify children with higher levels of lead in their blood compared to most children. This level is based on the 97.5th percentile of the blood lead values among U.S. children ages 1-5 years from 2015-2016 and 2017-2018 National Health and Nutrition Examination Survey (NHANES) cycles. Children with blood lead levels at or above the BLRV represent those at the top 2.5% with the highest blood lead levels.

NHANES is a population-based survey to assess the health and nutritional status of adults and children in the U.S. and determine the prevalence of major diseases and risk factors for diseases. Every four years, CDC reanalyzes blood lead data from the most recent two NHANES cycles to determine whether the reference value should be updated.

The value of 3.5 $\mu\text{g}/\text{dL}$ was derived from NHANES data from the 2015-2016 and 2017-2018 cycles. The Federal Advisory Committee, called the Lead Exposure and Prevention Advisory Committee (LEPAC), [unanimously voted on May 14, 2021](#) in favor of recommending that CDC update the reference value to 3.5 $\mu\text{g}/\text{dL}$ based on these NHANES data.


CDC's BLRV is a screening tool to identify children who have higher levels of lead in their blood compared with most children. The reference value is not health-based and is not a regulatory standard. States independently determine action thresholds based on state laws, regulations, and resource availability. CDC encourages healthcare providers and public health professionals to follow the [recommended follow-up actions based on confirmed blood lead levels](#).



Previous Terminology

Until 2012, children were identified as having a blood lead "level of concern" if the test result was 10 or more micrograms per deciliter ($\mu\text{g}/\text{dL}$) of lead in blood. CDC is no longer using this term and is instead using the blood lead reference value to identify children who have more lead in their blood than most children.

In 2012, the blood lead reference value (BLRV) for children corresponding to the 97.5 percentile was established to be 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) based NHANES data from 2007-2010. Prior to this current update, blood lead levels below 5 $\mu\text{g}/\text{dL}$ may, or may not, have been reported to parents. The new lower blood lead reference value of 3.5 $\mu\text{g}/\text{dL}$ means that more children could be identified as having lead exposure allowing parents, doctors, public health officials, and communities to act earlier to reduce the child's future exposure to lead.

Additional Resources

- [Blood Lead Levels in Children](#) – information on blood lead testing in children
- [Recommended Actions Based on Blood Lead Level](#) – recommendations for follow-up and case management of children based on confirmed blood lead levels
- [CDC's Recommended Terminology When Discussing Children's Blood Lead Levels](#)  [PDF – 330 KB] – guidance for interpreting and discussing children's blood lead levels

- [CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention \(ACCLPP\) Recommendations in “Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention”](#)  [PDF – 165 KB]
- [Recommendations of the Advisory Committee for Childhood Lead Poisoning Prevention \(ACCLPP\) “Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention”](#)  [PDF – 922 KB]

Last Reviewed: December 2, 2022