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National Notifiable Diseases Surveillance System (NNDSS)  
Explore Topics  
Search  
Search  
Clear Input  
For Everyone  
About About National Notifiable Diseases Surveillance System  
What is Case Surveillance?  
Case Surveillance Modernization  
Infectious Disease Tables  
Non-Infectious Disease Data  
Technical Resource Center  
Case Surveillance in Action  
Contact Us  
View all  
Related Topics:  
NDC Application  
View All  
search  
close search  
search  
National Notifiable Diseases Surveillance System (NNDSS)  
Menu  
Close  
search  
For Everyone  
About About National Notifiable Diseases Surveillance System  
What is Case Surveillance?  
Case Surveillance Modernization  
Infectious Disease Tables  
Non-Infectious Disease Data  
Technical Resource Center  
Case Surveillance in Action  
Contact Us  
View All  
Related Topics  
NDC Application  
View All  
National Notifiable Diseases Surveillance System (NNDSS)  
About About National Notifiable Diseases Surveillance System  
What is Case Surveillance?  
Case Surveillance Modernization  
Infectious Disease Tables  
Non-Infectious Disease Data  
Technical Resource Center  
Case Surveillance in Action  
Contact Us  
View All  
February 28, 2023  
Case Definitions  
Message Mapping Guides  
Supporting Documents for Implementation  
Event Codes & Other Surveillance Resources  
Lead in Blood  
2023 Case Definition  
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NOTE:  
A surveillance case definition is a set of uniform criteria used to define a disease for public health surveillance. Surveillance case definitions enable public health officials to classify and count cases consistently across reporting jurisdictions. Surveillance case definitions are not intended to be used by healthcare providers for making a clinical diagnosis or determining how to meet an individual patient’s health needs.  
CSTE Position Statement(s)  
22-EH-01  
Background  
Lead adversely affects multiple organ systems and can cause permanent damage, including neurotoxicity and adverse cardiovascular, renal, and reproductive effects. Lead in blood is the best biomarker of lead exposure. No safe blood lead level in children has been identified.(1,2) Detection of very low levels of lead in blood is limited by laboratory methods.(3)  
Lead is absorbed primarily by inhalation or ingestion.(2) The leading exposure source in children in the United States is lead-based paint dust in houses built before 1978.(2) The leading exposure source in adults is from work.(4)  
Reporting of blood lead test results by clinical laboratories to public health departments is the basis for surveillance for lead exposure. It is mandated in all states, although states’ reporting requirements vary related to age and blood lead level.(5)  
Laboratory Criteria  
Confirmatory laboratory evidence:  
Detection of lead in a venous blood specimen, tested by graphite furnace atomic absorption spectrometry (GFAAS) or inductively coupled plasma mass spectrometry (ICP/MS), that is at or above the reference value of 3.5 μg/dL.  
Detection of lead in two capillary  
‡‡  
blood specimens from a child less than 16 years old at or above the reference value of 3.5 μg/dL that are collected within 12 weeks of each other.  
Supportive laboratory evidence:  
Detection of lead in a single capillary blood specimen from a child less than 16 years old that is at or above the reference value of 3.5 μg/dL,  
OR  
Detection of lead in two capillary blood specimens from a child less than 16 years old at or above the reference value of 3.5 μg/dL that are collected after 12 weeks of each other.  
‡‡  
If specimen type is unknown, it should be considered capillary for persons <16 years of age and venous for persons ≥16 years of age, for the purpose of case classification.  
Criteria to Distinguish a New Case from an Existing Case  
Many individuals receive more than one blood lead test over time. Individuals who meet the confirmed case classification criteria should be counted as a case only once annually. To distinguish which are new cases to be enumerated annually from those that persist or recur for more than one year, the following should be applied:  
For children (less than age 16) and adults (age 16 years or older): A confirmed case based on a venous test should be enumerated once per calendar year as a new case if the case was not enumerated as a confirmed case in the previous calendar year.  
OR  
For children (less than age 16): A confirmed case based on two capillary tests within 12 weeks of each other should be enumerated once per calendar year as a new case if the case was not enumerated as a confirmed case in the previous calendar year.  
If the collection date of the second of the two capillary tests occurred in the subsequent calendar year, the case should be counted in the year of the first collection date.  
Case Classification  
Suspect  
Meets the supportive laboratory evidence.  
Confirmed  
Meets the confirmatory laboratory evidence.  
References  
National Toxicology Program. NTP Monograph on health effects of low-level lead. June 2012.  
ATSDR. Toxicological Profile for Lead August 2020.  
CDC. Lead exposure and prevention advisory committee (LEPAC) meeting 5\_14\_21 Transcript.  
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Council of State and Territorial Epidemiologists. State Reportable Conditions Assessment. Available at https://www.cste.org/page/SRCA. Accessed 2/6/2022.  
Back to Top  
Sources  
Print  
Share  
Facebook  
LinkedIn  
Twitter  
Syndicate  
Content Source:  
Case Definitions  
Message Mapping Guides  
Supporting Documents for Implementation  
Event Codes & Other Surveillance Resources  
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NNDSS receives and shares case data from state, local, and territorial health departments to help public health monitor, control, and prevent serious diseases.  
View All  
About About National Notifiable Diseases Surveillance System  
What is Case Surveillance?  
Case Surveillance Modernization  
Infectious Disease Tables  
Non-Infectious Disease Data  
Technical Resource Center  
Case Surveillance in Action  
Contact Us  
View All  
Sign up for Email Updates  
Contact CDC  
Organization  
Policies  
Web Policies  
Languages  
Languages  
Español  
Language Assistance  
Archive  
CDC Archive  
Public Health Publications  
Contact Us  
About CDC  
Organization  
Policies  
Web Policies  
Languages  
Languages  
Español  
Language Assistance  
Archive  
CDC Archive  
Public Health Publications  
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