

Childhood Lead Poisoning Prevention Program: Summary

CDC's Childhood Lead Poisoning Prevention Program (CLPPP) was authorized in by the Lead Contamination Control Act to initiate program efforts to eliminate childhood lead poisoning in the United States. One of the program's primary responsibilities is to support state and local health departments to determine the extent of childhood lead poisoning by screening children for elevated blood lead levels, helping to ensure that lead-poisoned infants and children receive medical and environmental follow-up, and developing neighborhood-based efforts to prevent childhood lead poisoning. Since its inception, the CDC childhood lead poisoning prevention effort has funded nearly 60 childhood lead poisoning prevention programs to develop, implement, and evaluate lead poisoning prevention activities and developed the Childhood Blood Lead Surveillance System through which states can report data to CDC.

1990-2009: CDC awarded funds to state and local health departments to support comprehensive childhood lead poisoning prevention programs.

2009-2010: With congressional acknowledgment, this mission was expanded to include a healthy homes initiative that addressed multiple childhood diseases and injuries in the home, but with a continued focus on reaching the Healthy People goal of eliminating childhood lead poisoning.

2011: The budget authorization, appropriation line, and branch name (Lead Poisoning Prevention Branch - LPPB) were changed to reflect Congress' intention that the Program expand from a sole focus on lead poisoning to a broad mission to improve the nation's capacity to identify and address housing related health hazards.

2012: Funding for the Program was reduced from \$30 million to \$1.5 million which curtailed operational activities.

2014-2016: Partial Program funding was restored with a focus on childhood lead poisoning prevention and the Program brought more state partners into production status using the CDC-developed software, called Healthy Homes and Lead Poisoning Surveillance System (HHLPSS). (Despite the name, healthy homes emphasis on program and data collection was never fully realized). More emphasis was placed on maintenance and systems updates for improving HHLPSS to provide case management for childhood lead poisoning prevention programs. Software enhancements and information security controls were a significant part of this effort.

2017-2020: The program period will have the following main objectives: Support lead poisoning prevention activities including blood lead testing, surveillance, and targeted population-based interventions. Recipients will be expected to demonstrate that policies and systems are in place to identify lead-exposed children and link them to recommended services. More specifically, they will be expected to work closely with other agencies, partners, stakeholders and others serving children to ensure that a comprehensive system of referral, case management, follow up, and evaluation is in place for lead-exposed children.

Note: On January 1, 2018, announced in 83 FR 6179, the Healthy Homes and Lead Poisoning Prevention Program (HHLPPP) was renamed the Lead Poisoning Prevention Section within the Lead Poisoning Prevention and Environmental Health Tracking Branch, in the Division of Environmental Health Science and Practice, National Center for Environmental Health at CDC.

2014—2017 Publications

1. Basir M, Umar-Tsafe N, Getso K, Kaita IM, Nasidi A, Sani-Gwarzo N, Nguku P, Davis L, Brown MJ. Assessment of blood lead levels among children aged ≤ 5 Years — Zamfara State, Nigeria, June–July 2012. *Morbidity and Mortality Weekly Report*. 2014;63(15):325-7. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6315a2.htm?s_cid=mm6315a2e
2. Ponder-Brookins P, Witt J, Steward J, Greenwell D, Chew GL, Samuel Y, Kennedy C, Brown MJ. Incorporating community-based participatory research principles into environmental health research: challenges and lessons learned from a housing pilot study. *J Environ Health*. 2014;76(10):8-17. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/24988659>
3. Raymond J, Wheeler W, Brown MJ. Lead screening and prevalence of blood lead levels in children aged 1–2 years—Child Blood Lead Surveillance System, United States, 2002–2010 and National Health and Nutrition Examination Survey, United States, 1999–2010. In: *Use of selected clinical preventive services to improve the health of infants, children, and adolescents—United States, 1999–2011*. *MMWR* 2014;63 (Suppl 2). Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/su6302a6.htm>.
4. Thurtle N, Greig J, Cooney L, Amitai Y, Ariti C, Brown MJ, Kosnett MJ, Moussally K, Sani-Gwarzo N, Akpan H, Shanks L, Dargan PI. Description of 3,180 courses of chelation with dimercaptosuccinic acid in children ≤ 5 y with severe lead poisoning in Zamfara, Northern Nigeria: A retrospective analysis of programme data. *PLoS Med* 11(10): e1001739. Available at: <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001739>
5. Educational Services for Children Affected by Lead Expert Panel. *Educational interventions for children affected by lead*. Atlanta: U.S. Department of Health and Human Services; 2015 [Brown MJ]. Available at: https://www.cdc.gov/nceh/lead/publications/Educational_Interventions_Children_Affected_by_Lead.pdf
6. Mason J, Wheeler W, Brown MJ. The economic burden of exposure to secondhand smoke for child and adult never smokers residing in U.S. public housing. *Public Health Rep*. 2015 130(3):230–44.
7. Raymond J, Brown MJ. Childhood blood lead levels—United States, 2007–2012. *MMWR Morbidity and Mortality Weekly Report* 2015;62(54):76-80. Errata in: *MMWR Morbidity and Mortality Weekly Report* 2015;42(45):1277.
8. Kennedy C, Lordo R, Sucusky MS, Boehm R, Brown MJ. Evaluating the effectiveness of state specific lead-based paint hazard risk reduction laws in preventing recurring incidences of lead poisoning in children. *Int J Hyg Environ Health*. 2016;219(1):110–7. Epub 2015 Oct 9.
9. Dignam T, García BR, De León M, Curtis G, Creanga AA, Azofeifa A, Kennedy C, Brown MJ. Prevalence of Elevated Blood Lead Levels and Risk Factors Among Residents Younger Than 6 Years, Puerto Rico-2010. *J Public Health Manag Pract*. 2016;22(1):E22–35. doi: 10.1097/PHH.0000000000000224.

10. Dignam T, García BR, De León M, Curtis G, Creanga AA, Azofeifa A, Kennedy C, Brown MJ. Prevalence of elevated blood lead levels and risk factors among residents younger than 6 years, Puerto Rico-2010. *J Public Health Manag Pract*. 2016;22(1):E22-35.
11. Kaufman JA, Brown MJ, Umar-Tsafe NT, Adbullah MB, Getso KI, Kaita IM, Sule BB, Ba'aba A, Davis L, Nguku PM, Sani-Gwarzo N. Prevalence and risk factors of elevated blood lead in children in gold ore processing communities, Zamfara, Nigeria, 2012. *J Health Pollut*. 2016;6(11):2-8.
12. Kennedy C, Lordo R, Sucosky MS, Boehm R, Brown MJ. Evaluating the effectiveness of state specific lead-based paint hazard risk reduction laws in preventing recurring incidences of lead poisoning in children. *Int J Hyg Environ Health*. 2016;219(1):110-7. Epub 2015 Oct 9.
13. Kennedy C, Yard E, Dignam T, Buchanan S, Brown MJ, Raymond J, Rogers HS, Sarisky J, de Castro R, Arias I, Breyse P. Blood lead levels among children aged <6 Years—Flint, Michigan, 2013–2016. *MMWR*. 2016;65. Available at: <https://www.cdc.gov/mmwr/volumes/65/wr/mm6525e1.htm>
14. Raymond J, Brown MJ. Blood lead levels in children aged <5 years — United States, 2007–2013. *MMWR*. 2016;63:66–72. Available at: <https://www.cdc.gov/mmwr/volumes/63/wr/mm6355a6.htm>
15. Raymond J, Brown MJ. Childhood Blood Lead Levels in Children Aged <5 Years — United States, 2007–2014. *MMWR*. January 20, 2017 / 66; 1-10. Available at: https://www.cdc.gov/mmwr/volumes/66/ss/ss6603a1.htm?s_cid=ss6603a1_w

Additional examples of program accomplishments include:

2014

- JT Lewis Site Investigation/Epi-Aid with ATSDR, EPA, and Philadelphia Department of Health (Emergency Epidemic Investigations; OMB Control No. 0920-0008; expiration date 07/31/2014).

Recipient Activities:

- New York City identified lead hazards related to Bo Ying Compound, which is marketed for treatment of ailments in infants and children. The City reported its finding to the Food and Drug Administration (FDA). See Public Safety Alert at <http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicinalProducts/ucm416441.htm>

2015

- HHLPPP completed data analysis for the JT Lewis Site Investigation/Epi-Aid in conjunction with the US Environmental Protection Agency (EPA) and the Philadelphia Health Department. The final report is in development.

Recipient Activities:

- Rhode Island: used the cooperative agreement to create reports for all schools in the state showing screening rates in all schools.
- New York City: created and shared a poster for the Chinese community on Bo Ying Compound. The compound, marketed for treatment of ailments in infants and children, may contain excessive levels of lead. The poster has been distributed throughout the Chinese communities in New York City and Washington State, supporting lead poisoning prevention efforts and showing collaborative effort from the cooperative agreement.
- New Jersey: The program identified the need for a recovery project that increased residents' knowledge of the connections between health and housing; ensured a competent health, social services, and housing professional workforce that is knowledgeable on the health impacts of housing conditions; and increased access to blood lead screenings for high-risk residents. The NJ Healthy Homes Training Center (HHTC), a public/private partnership between NJ DOH and Isles, Inc., a Trenton-based non-profit community development agency, developed a one-hour public education presentation "Creating a Healthy Home after a Hurricane or Flood" Local health departments conducted targeted screening using the LeadCare II blood lead analyzer. Statewide, in SFY2014, 2.9% of children less than 17 years of age had a blood lead level $5 \mu\text{g}/\text{dL}$ or greater. The recovery project identified a rate of 7.2% (95% confidence interval).
- Oklahoma: The Oklahoma Childhood Lead Poisoning Prevention Program (OCLPPP) has had two meetings with the Oklahoma Health Care Authority (OHCA) to discuss a data sharing agreement to obtain a waiver of universal lead screening of all Medicaid children and focus on targeted screening for children who live in high-risk areas. The purpose is to compare the rates of children being screened on Medicaid versus those not on Medicaid. This can be compared to national screening levels of children on Medicaid and also to determine if there are areas in the state that have very low screening rates. These areas can be targeted to increase screening and ensure that decisions made on low risk and high-risk areas are data-driven. This will also allow OCLPPP to explore option for billing for services such as environmental investigations for children covered by Medicaid.
- Wisconsin-Minnesota: Fraser Shipyard Lead Investigation Plan
Renovations in early 2015 at the Fraser Shipyard on the Wisconsin-Minnesota border resulted in elevated blood lead levels (EBLLs) in three employees working on the project. The investigation and response resulted in a large-scale collaboration between the Minnesota Department of Health (MDH), the Wisconsin Department of Health Services (WI DHS), OSHA, and Wisconsin Local Public Health Agencies (LPHAs). The collaboration

took a three-pronged approach to the situation: a survey to assess the worksite and take home risk of lead exposure and lead exposure related symptoms; blood-lead sampling by health departments in both states to track blood lead levels of workers and their families; and environmental sampling by a certified professional for residences and vehicles from confirmed cases. Of the 357 workers who were potentially exposed to lead hazards at the shipyard, 233 had at least one blood lead screening. Worker protection and medical monitoring has increased due to this incident, and policies and procedures have also been reevaluated in light of the challenges faced throughout this event.

2016

- The HHLPPP supported CDC's response to the lead contamination of drinking water in Flint, Michigan, including Emergency Operations Center (EOC) activation, data management, and community outreach.
 - Assisted Flint in response to the water contamination crisis with monitoring BLLs in more than 50% of the community's children under 6 years of age, connecting more than 90% of children with elevated BLLs to case management.
 - Created an activity book to offer parents an interactive way to talk to their kids about lead in water.
- Collaborated with leadership from the NCEH Communications team for an innovation project related to a CDC lead poisoning prevention program redesign (as part of the HHS Ignite Accelerator program).
- Provided data that supported the U.S. Department of Housing and Urban Development's plan to ban smoking in public housing.
- Raised awareness about lead poisoning during October's National Lead Poisoning Prevention Week via the tri-agency toolkit with customizable resources for state and local governments and organizations to develop their own campaigns.

Recipient Activities:

- The District of Columbia program worked with the Centers for Medicaid and Medicare Services (CMS) and the College of American Pathologists (CAP) to have labs report blood sample type as a requirement for maintaining accreditation—this success contributes to more-accurate surveillance of pediatric BLLs nationwide, improving the knowledge of the true burden of lead poisoning.
- New York City: In New York City, over 300,000 children under 6 years of age are tested annually. Since 2010, the number of children with blood lead levels at or above the 5

micrograms per deciliter ($\mu\text{g}/\text{dL}$) has decreased from 13,000 children in 2010 to 6,000 children in 2014. The lead surveillance program used small-area analyses to identify neighborhoods with higher blood lead levels. Within one neighborhood with a high rate of lead poisoning, the vast majority of children with the highest blood lead levels resided in an area home to a large Hasidic Jewish community. The lead program collaborated with local political and religious leaders and worked with trusted community based organizations to increase awareness about childhood lead poisoning prevention and all information was translated into Yiddish.

- Rhode Island: In 2011, four core cities in Rhode Island reported having three times the number of children with elevated blood lead levels $\geq 10 \mu\text{g}/\text{dL}$ compared to other Rhode Island cities and towns. An estimated 80% of Rhode Island homes were built before 1978 and likely contain lead-based paint hazards, which can create lead dust hazards during renovations to these homes. Rhode Island implemented the US EPA's 2010 Lead-Based Paint Renovation, Repair and Painting (RRP) Rule that requires workers to be certified and trained in the use of lead-safe work practices, and requires renovation, repair, and painting firms to be licensed by the department of health. Following the first full year of the program, there were 225 fewer children in Rhode Island with elevated blood levels and 180 cases of RRP violations were prosecuted for failure to obtain lead-safe certificates for rental units.
- Louisiana: Louisiana state data demonstrated that some children attending Women and Infants Special Nutrition Projects (WIC clinics) do not receive routine health prevention services, and therefore are unlikely to receive blood lead testing at a medical clinic. The Louisiana lead program partnered with a New Orleans area WIC clinic to increase lead testing rates of children in Louisiana and to determine the percent of children tested during WIC clinic visits who had blood lead levels $\geq 5 \mu\text{g}/\text{dL}$. By matching WIC client lists with surveillance data, the program demonstrated that WIC clinics are an efficient way to screen high-risk children who would not otherwise be tested. The program ensured blood lead testing for 1,395 children, 81% of whom had never had a previous test and has expanded to include WIC clinics in other high-risk areas of the state.
- Washington: The Washington State Lead Poisoning Prevention Program convened an expert panel to develop risk-based childhood lead screening recommendations for use by clinicians in the state. The Program partnered with the Refugee Health Program to screen all refugee children between 6 months and 16 years of age as part of the refugee resettlement program. Over a three-year period from 2013 to 2016, they screened 3,275 children. Fourteen percent of the refugee children screened had elevated blood lead levels and 3% with blood lead levels greater than $10 \mu\text{g}/\text{dL}$. These children were then able to be linked to appropriate follow-up services.

- Mississippi: The Mississippi Lead Poisoning Prevention and Healthy Homes Program used CDC cooperative agreement funds to partner with six communities identified as high-risk areas for lead poisoning: the City of Meridian, the City of Jackson, the City of Hattiesburg, the City of West Point, the City of Moss Point, and the City of Yazoo City. Between July 1 and December 31, 2015, city partners facilitated lead poisoning prevention and health homes trainings, planned and conducted healthy homes community planning meetings featuring focused discussion on childhood lead poisoning prevention, and distributed health education materials to residents. Through focused campaigns, the communities distributed 2,000 lead poisoning prevention educational materials featuring details about lead testing and identifying lead sources. The communities also distributed 900 lead poisoning prevention toolkits to resident families. Since 2010, Mississippi has experienced an 18% increase in children tested for lead.
- Ohio: In Marion County, Ohio staff at the local health department have worked with the OHHLPPP epidemiologist to create customized maps for their area depicting the high risk census tracts. These maps are being used to create posters to display to the public at organized events.

2017

Recipient Activities:

- Illinois: Over the course of three years, the CLEAR-Win project assisted in lead-safe replacement of almost 8,000 windows at 379 properties containing 466 housing units. The 466 housing units included 251 children under the age of 6, the population most vulnerable to lead poisoning. In conjunction with Illinois' study, HUD analyzed a sample of nearly 100 homes remediated in the CLEAR-Win program, comparing lead dust sampling performed at baseline and at one year. Lead dust wipe samples were collected by HUD before CLEAR-Win commenced, immediately after (clearance sampling), and nominally one year after CLEAR-Win's work was completed. Between baseline and 1 year post intervention, geometric mean lead dust for interior floors, interior sills, and exterior troughs declined by 44%, 88% and 98% respectively. HUD's results of CLEAR-Win's pilot program in Illinois show that a state health department can successfully implement a window replacement program that dramatically reduces childhood lead exposure (Jacobs et al., 2016).