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Pete Ricketts, Governor

December 30, 2020

Patrick O'Donnell, Clerk of the Legislature State Capitol, Room 2018 P.O. Box 94604 Lincoln, NE 68509

RE: 2020 Elevated Blood Lead Level Annual Report

Dear Mr. O'Donnell:

In accordance with Neb. Rev. Stat. §71-2518, please find attached a copy of the 2020 Annual Report on Elevated Blood Lead Levels for Children Age 0-6 Years Old. This report describes the work accomplished by the Nebraska Childhood Lead Poisoning Prevention Program and lists the number of children tested and the number of children with an elevated level in Nebraska during October 1, 2019 to September 30, 2020.

Sincerely,

Gary J. anthone no

Gary J. Anthone, M.D. Chief Medical Officer Director, Division of Public Health Department of Health and Human Services

## Nebraska Childhood Lead Poisoning Prevention Program

#### Annual Report on Elevated Blood Lead Levels for Children Ages 0-6 Years Old October 1, 2019 to September 30, 2020

#### BACKGROUND

In April 2012, the Nebraska Legislature passed the Childhood Lead Poisoning Prevention Act, codified in Neb. Rev. Stat. §§ 71-2513 to 71-2518. The statutes require that the Nebraska Department of Health and Human Services (DHHS) Division of Public Health establishes a Lead Poisoning Prevention Program which includes the following components:

- Develop a statewide blood lead testing plan and a risk assessment screening questionnaire
- Develop an educational and community outreach plan including development of educational materials
- Initiate contact with the local public health department or the physician when a child has an elevated blood lead level (EBLL) and offer technical assistance
- Report annually to the Legislature

This report describes the progress that has been made in the prevention of childhood lead poisoning in Nebraska, including the number of children ages 0 through 6 years old (<84 months) tested for blood lead levels and who were confirmed to have elevated levels during the period of October 1, 2019 to September 30, 2020. The report compares the results of previous fiscal years, describes the DHHS testing plan, and provides updates on program activities.

#### **PROGRAM OVERVIEW**

The Nebraska Childhood Lead Poisoning Prevention Program is funded by a federal grant from the Centers for Disease Control and Prevention (CDC). This funding represents Nebraska's first federal childhood lead poisoning prevention award received since 2007 (Table 1). The current CDC funding is a four-year grant which began on September 30, 2017 and ends September 29, 2021.

The goal of the Nebraska Childhood Lead Poisoning Prevention Program is to prevent lead exposures among children across the state. The grant funding allows DHHS to coordinate public health surveillance and outreach activities, but does not cover direct services such as providing blood lead screening tests, comprehensive case management, or lead abatement and housing remediation. The Program has four key strategies to reach its goal: 1) strengthen blood lead testing; 2) strengthen surveillance and detection; 3) strengthen population-based interventions; and 4) enhance processes to identify and provide services to lead-exposed children.

	Federal Fiscal Year									
	2013	2014	2015	2016	2017	2018	2019*	2020	2021	
Federal (CDC)	\$0	\$0	\$0	\$0	\$0	\$391,795	\$543,163	\$402,343	\$482,812	

Table 1.	DHHS	Funding	Summarv	for	Nebraska	Childhood	d Lead	Poisoning	Prevention	Program
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\* Includes \$140,820 of one-time supplemental funding.

#### NUMBERS OF CHILDREN TESTED AND CONFIRMED ELEVATED BLOOD LEAD LEVELS

Under Neb. Rev. Stat. § 71-2518 (2), all blood lead level tests conducted in Nebraska are required to be reported to the Department of Health and Human Services (DHHS). Blood lead tests are also reportable under Title 173 Chapter 1 of the Nebraska Administrative Code, which requires physicians and laboratories to report test results within 7 days. Blood lead test reports are submitted to the DHHS either by automated electronic laboratory reporting or via mail or facsimile to be manually entered. Starting on October 1, 2018, all blood lead tests are reported into the Nebraska Electronic Disease Surveillance System (NEDSS). Prior to this transition, a portion of blood lead tests were stored in a separate database called STELLAR.

DHHS recognizes the current CDC reference level of five micrograms per deciliter ( $\mu$ g/dL) or higher to define an elevated blood lead level. Any blood lead level higher than the reference level is considered elevated. A confirmed elevated blood lead level is defined as any elevated blood lead level verified by a venous blood test. Data from both NEDSS and STELLAR databases were combined for federal fiscal years 2013-2020 and analyzed. Previous fiscal year data were updated to reflect the new analysis methodology.

From October 1, 2019 to September 30, 2020, 35,107 children ages 0 through 6 years old were tested for elevated blood lead levels. The number of children tested decreased from the previous year, likely an impact of the COVID-19 pandemic. A total of 300 (0.85%) children tested had a confirmed elevated blood lead level of 5  $\mu$ g/dL or higher. A total of 101 (0.29%) children tested had a confirmed elevated blood lead level of 10  $\mu$ g/dL or higher.

- Table 2 shows the total number of children tested and the number and percent of children with confirmed\* elevated blood lead levels for federal fiscal years 2013-2020.
- Figure 1 shows the number of children with confirmed blood lead levels of  $\geq 5 \ \mu g/dL$  and  $\geq 10 \ \mu g/dL$  for fiscal years 2013-2020.
- Figure 2 shows the percentage of children with tested blood lead levels of  $\geq 5 \ \mu g/dL$  and  $\geq 10 \ \mu g/dL$  for fiscal years 2013-2020.

Federal fiscal year	# of children tested	# of children with confirmed elevated BLL (≥ 5µg/dL)*	% of children tested with confirmed elevated BLL (≥ 5µg/dL)	# of children with confirmed elevated BLL (≥ 10µg/dL)*	% of children tested with confirmed elevated BLL (≥ 10 µg/dL)
2013	34,510	404	1.17%	113	0.33%
2014	34,110	465	1.36%	132	0.39%
2015	33,887	407	1.20%	111	0.33%
2016	35,352	419	1.19%	125	0.35%
2017	36,008	482	1.34%	155	0.43%
2018	36,947	425	1.15%	124	0.34%
2019	39,361	382	0.97%	124	0.32%
2020	35,107	300	0.85%	101	0.29%

# Table 2. Number of Nebraska Children 0-6 Years Old (<84 months) Tested for Lead and the Number and Percentage of Children with Confirmed Elevated Blood Lead Levels ( $\geq$ 5 and $\geq$ 10 µg/dL), by Federal Fiscal Year.

Source: Nebraska DHHS Blood Lead Surveillance System.

Note: Data are provisional and may be revised as additional reports are received.

\*Confirmed indicates the blood lead level was verified with a venous test.



Figure 1. Number of Nebraska Children 0-6 Years Old (<84 months) with Confirmed\* Elevated Blood Lead Levels, Federal Fiscal Years 2013-2020.

Source: Nebraska DHHS Blood Lead Surveillance System. Note: Data are provisional and may be revised as additional reports are received. \*Confirmed indicates the blood lead level was verified with a venous test.

Figure 2. Percentage of Nebraska Children 0-6 Years Old (<84 months) Tested with Confirmed\* Elevated Blood Lead Levels, Federal Fiscal Years 2013-2020.



Source: Nebraska DHHS Blood Lead Surveillance System

Note: Data are provisional and may be revised as additional reports are received.

\*Confirmed indicates the blood lead level was verified with a venous test.

#### STATEWIDE BLOOD LEAD TESTING PLAN

In 2012, DHHS developed a statewide plan to provide guidance regarding which children should receive a screening test for lead poisoning based on three criteria.

#### Testing Criteria 1

The first criterion in the testing plan is geography. To isolate important geographic variables, DHHS studied surveillance and demographic data, the percentage of older housing, and locations of known lead sources. The methodology determined zip codes that historically have had increased risk of lead exposure. These include the Omaha Superfund Site (Baseline Human Health Risk Assessment, Omaha Lead Superfund Site, DHHS, 2004) as well as those zip codes with at least 5 lead poisoning cases between 2014 and 2015 and with more than 27% of the housing stock built before 1950. DHHS is currently re-evaluating the zip codes using updated surveillance data and is on track to update new zip codes in 2021.

#### Testing Criteria 2

The second criterion of the plan states what is currently required by the Medicaid and Women, Infants, and Children (WIC) programs. Per federal and state law, all children insured by Medicaid must be tested at 12 and 24 months. Children between the ages of 36 months and 72 months of age must receive a screening blood lead test if they have not been previously screened for lead poisoning (https://www.medicaid.gov/medicaid/benefits/epsdt/leadscreening/index.html). WIC requires that upon enrollment of a child, the parent must be asked if the child has had a blood lead test. If the child has not had a test, they must be referred to programs where they can obtain such a test (Policy MPSF-WC-01-05-P).

#### Testing Criteria 3

The third criterion of the plan consists of a questionnaire designed to identify lead exposure risks not addressed by the other criteria. The child's parents or guardians should be asked specific exposure questions to determine each child's risk. If the response to any of the questions is "yes" or "don't know," the child should be tested annually through age 5. The questions are as follows:

- 1. Does the child live in or often visit a house, daycare, preschool, home of a relative, etc., built before 1950?
- 2. Does the child live in or often visit a house built before 1978 that has been remodeled within the last year?
- 3. Does the child have a brother, sister or playmate with lead poisoning?
- 4. Does the child live with an adult whose job or hobby involves lead?
- 5. Does the child's family use any home remedies or cultural practices that may contain or use lead?
- 6. Is the child included in a special population group, i.e., foreign adoptee, refugee, migrant, immigrant, foster care child?

In 2012, the Statewide Blood Lead Testing Plan was sent to all members of the Nebraska Medical Association and to all health care providers in the state through the DHHS Health Alert Network. The Testing Plan is routinely distributed to local health department staff and health care providers on an ad-hoc basis. The Plan is available on the DHHS website at: <u>dhhs.ne.gov/lead</u> and is summarized at the end of this report.

#### **EDUCATION AND COMMUNITY OUTREACH ACTIVITIES**

The novel coronavirus and the COVID-19 pandemic, has affected the Nebraska Childhood Lead Poisoning Prevention Program and many of the local health departments throughout Nebraska. Despite disruptions created by the COVID-19 public health emergency, DHHS and its partners continue to implement education and outreach activities aimed at reducing lead exposures across the state, as summarized below.

Activity	Description
	The DHHS lead website, available at <u>dhhs.ne.gov/lead</u> , provides easily
Lead Website	accessible information to the public and specific audiences such as parents,
	homeowners, and health care providers.
	DHHS has developed educational materials for parents of young children.
	The following brochures are available in English and Spanish and are
	accessible on the DHHS website. Printed copies were also distributed to
	eighteen local health departments.
Educational	Childhood Lead Poison Prevention
Materials for	<ul> <li>Lead Dust Clean-Up and Control</li> </ul>
Parents	<ul> <li>Preventing Lead Poisoning in Adults</li> </ul>
	• Lead in Toys
	<ul> <li>Protect Your Family From Lead in Your Home</li> </ul>
	Keep Nebraska Homes Lead Safe!
	The Lead-Safe Certified Guide to Renovate Right
	A childhood lead poisoning prevention campaign was launched in 2019,
Lead	with a target audience of parents and caregivers. The landing webpage for
Poisoning	the campaign is available at <u>www.leadsafe.ne.gov</u> . The Nebraska Childhood
Prevention	Lead Poisoning Prevention Program continues to maintain leadsafe.ne.gov
Campaign	and utilized social media and Spotify advertisements to reach multiple
	caregiver age groups.
Lead Data	An infographic that presents surveillance data and lead exposure risk
Infogranhic	information for calendar year 2019 was developed. DHHS has distributed it
mogrupme	to health care providers, local health departments, and other stakeholders.
Health Care	DHHS maintains guidelines for health care providers. The guidelines
Provider	provide recommendations for managing elevated blood lead levels. A
Guidelines	summary of the guidelines is included at the end of this report.
	In February 2020, DHHS presented at the Early Childhood Interagency
Training	Steering Committee on Childhood Lead Poisoning and Early Interventions.
Public Health	In partnership with the University of Nebraska Monroe-Meyer Institute, a
Partners	virtual training was held in February 2020 for providers and clinicians
	throughout Nebraska about Medicaid and blood lead testing.
Outreach to	The Program provided outreach to health care providers involved with the
Health	American Academy of Pediatrics Nebraska Chapter at their fall 2019
Professionals	conference. Additionally, the Program presented at the 2019 Recharge for
	Resilience conference and at the Wellcare Member Advisory Committee.
Local	In January 2020, the Nebraska Childhood Lead Poisoning Prevention
Education	Program provided subawards to 18 local health departments throughout the
and Outreach	state to address key prevention strategies, including community outreach
Activities	anned at promoting public awareness of prevention of childhood lead
Activities	poisoning. From October 2019 to September 2020, more than 355 local lead

poisoning prevention educational and outreach activities were conducted across the state. Activities included health fairs, community events, press
health care provider outreach.

#### INITIATE CONTACT WITH LOCAL PUBLIC HEALTH DEPARTMENTS AND PHYSICIANS

The Nebraska Childhood Lead Poisoning Prevention Program ensures children with elevated blood lead levels are identified though surveillance and linked to services through coordination with physicians, local health departments, and parents when requests for additional assistance are received. In July 2019, DHHS developed and disseminated new guidelines for public health investigators and case managers of children with elevated blood lead levels.

Through its CDC grant, the Nebraska Childhood Lead Poisoning Prevention Program provides subaward funding to eighteen local health departments for conducting local blood lead level surveillance; providing investigation and public health responses; and assisting DHHS in coordinating inspections, referrals, and community linkages for services. DHHS does not fund Douglas County Health Department because it already receives funding through other federal sources.

The activities reported below represent results for October 2019 to September 2020 reported by all local health departments in the state.

- 749 letters were sent to parents of children with elevated BLLs.
- 244 contact interactions (phone or mail) were made with health care providers of children with elevated BLLs.
- 115 educational packets were sent to parents of children with elevated BLLs.
- 36 educational home visits were conducted.
- 71 environmental investigations for children with elevated blood lead levels were conducted.
  - DHHS conducted 21 on-site lead investigations. For children not residing in Douglas County, DHHS currently provides on-site lead investigation home visits for children with confirmed blood lead levels≥ 10 µg/dL.
  - Douglas County Health Department (DCHD) conducted 50 lead investigations, 7 of which have been virtual. DCHD provides lead investigation home visits for children with confirmed blood lead levels ≥ 5  $\mu$ g/dL.
- Additional referrals to other resources (housing, legal, nutrition, lead testing in drinking water, etc.) were provided to families on an as-needed basis.

#### Nebraska DHHS Division of Public Health/Childhood Lead Poisoning Prevention Program Statewide Blood Lead Risk Assessment/Blood Lead Testing Plan



# Childhood Lead Exposure and Poisoning Medical Management Recommendations

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- There is no safe level of lead in the blood. The CDC reference for an elevated blood lead level (BLL) is 5 µg/dL.
- Exposure to lead can have a wide range of effects on a child's development and behavior.
- Any BLL of 5 µg/dL or higher requires intervention to prevent further lead exposure and increase in blood lead levels.
- Any capillary blood lead level ≥5 µg/dL should be confirmed with a venous blood lead test.

# Recommended Schedule for Obtaining Confirmatory Venous Test After Capillary Test

Capillary BLL	Confirm Capillary Test with Venous Blood Test:				
0 – <5 µg/dL	No confirmation needed. Repeat test according to DHHS Blood Lead Screening Plan.				
5 – 9 µg/dL	Within 3 months*				
10 – 44 µg/dL	Within 1 month*				
45 – 69 μg/dL	Within 24 - 48 hours*				
≥ 70 µg/dL	Immediately as an emergency test*				

\*The higher the BLL on a screening test, the more urgent the need for confirmatory testing.

#### Medical Management Recommendations for Confirmed Blood Lead Levels

Confirmed BLL	Follow-up Venous Test Schedule	Recommended Actions Based on Confirmed Venous BLL				
< 5 µg/dL	No follow-up needed. Continue to test according to DHHS Blood Lead Screening Plan	<ul> <li>Review lab results with family. For reference, the geometric mean blood lead level for children 1-5 years old is less than 2 μg/dL.</li> <li>Repeat blood lead level in 6-12 months if the child is at high risk or risk changes during the timeframe.</li> <li>Provide anticipatory guidance and discuss common lead exposure sources. Paint in homes built prior to 1978 is most common source of lead exposure.</li> </ul>				
5 – 9 µg/dL	Within 1-3 months* Long-term follow-up: 6-9 months**	<ul> <li>Provide education: environmental lead sources, potential health effects, importance of follow-up testing, and preliminary advice on reducing exposures.</li> <li>Monitor blood lead level until BLL is &lt;5 µg/dL and lead exposures are controlled.</li> </ul>				
10 – 14 μg/dL	Within 1-3 months* Long-term follow-up: 3-6 months**	<ul> <li>Screen for iron deficiency with appropriate laboratory testing (CBC, ferritin).</li> <li>Provide nutritional counseling related to iron, calcium, and vitamin C. Encourage consumption of fruit and iron-enriched foods. Consider multivitamin with iron.</li> <li>Perform structured developmental screening evaluations at child health maintenance visits, as lead's effect on development may manifest over years.</li> <li>Consider abdominal x-ray based on the environmental investigation and history (e.g. history of pica or excessive mouthing behaviors).</li> <li>Consider testing other children in the home who may be exposed.</li> </ul>				
15 – 19 μg/dL	Within 1-3 months* Long-term follow-up: 1-3 months **					
20 – 44 µg/dL	Within 2-4 weeks* Long-term follow-up: 1-3 months**	<ul> <li>Refer family to services as needed and if eligible: WIC; home visitation; early development/early intervention if developmental delays diagnosed or suspected.</li> </ul>				
45 – 69 μg/dL	Within 1 week or as medically indicated*	<ul> <li>URGENT: Follow guidance above, plus:</li> <li>Oral chelation therapy as indicated. If chelating, consider hospitalization if a lead-safe environment cannot be assured.</li> <li>Chelation should be done in consultation with an expert. Contact Pediatric Environmental Health Specialty Unit (1-800-421-9916) or Poison Control Center (1-800-222-1222).</li> </ul>				
≥ 70 µg/dL	As soon as possible*	<b>MEDICAL EMERGENCY:</b> Hospitalize and provide chelation therapy once confirmed with venous blood lead test. Contact Pediatric Environmental Health Specialty Unit (1-800-421-9916) or Poison Control Center (1-800-222-1222).				

\*The higher the venous blood lead level, the more frequent follow-up testing is needed. \*\*Long-term follow-up should only begin after first 2-4 tests, blood lead levels are declining, and child is in a lead-safe environment.

Nebraska Department of Health and Human Services, Division of Public Health Nebraska Childhood Lead Poisoning Prevention Program: 1-888-242-1100 (option 3) Revised 3/25/19

# Lead Exposures and Health Risks in Children

- Blood levels at or below 10 µg/dL are associated with a wide range of subclinical effects on a child's development and behavior, such as inattention, hyperactivity, and decreased cognitive function.
- Even levels at or below 5 µg/dL are associated with decrements in cognitive functions, as measured by IQ scores and academic performance.
- At blood lead levels >40 µg/dL, clinically evident effects such as anemia, abdominal pain, nephropathy, and encephalopathy can be seen. Lower blood lead levels may cause adverse effects on the central nervous system, kidney, and hematopoietic system.
- Lead exposure can be viewed as a lifelong exposure, even after blood lead levels decline. Bone acts as a reservoir for lead.
- Childhood lead exposure has potential consequences for adult health and is linked to hypertension, renal insufficiency, and increased cardiovascular-related mortality.

# Managing Elevated Blood Lead Levels in Children

Management for lead exposure should be provided for all children with a confirmed BLL of 5 µg/dL or higher to prevent increases in lead levels. While there are many sources of lead, most children with elevated BLLs live in or regularly visit a home with deteriorating lead paint. Successful management and/or treatment depends on eliminating the child's exposure. Primary management of lead exposure includes:

- 1. Finding and eliminating the source of the lead;
- 2. Instruction in personal and household hygiene measures;
- 3. Optimizing the child's diet and nutritional status;
- 4. Close follow-up, including repeat testing to monitor blood lead level.

## Sources of Lead

Paint and Dust	Occupations and Hobbies	Soil and Water	Cultural/Other Sources
<ul> <li>Chipping or peeling lead paint and its dust is the most common source of lead exposure</li> </ul>	<ul> <li>Lead dust can be brought home from household member's job or hobby:</li> </ul>	<ul> <li>Bare soil, especially in areas near old homes, industrial sites, or busy</li> </ul>	<ul> <li>Traditional or folk medicines</li> <li>Imported cosmetics,</li> </ul>
<ul> <li>Homes built before 1978 may contain lead-based paint</li> </ul>	<ul> <li>Making items that contain lead: bullets, batteries,</li> </ul>	<ul><li>roads</li><li>Lead paint can contaminate</li></ul>	especially kohl/surma, sindoor, or kumkum
Even tiny amounts of dust from lead paint can cause a child's blood lead levels to rise.	<ul><li>stained glass</li><li>Foundries and scrap metal</li></ul>	soil around perimeter of house	• Spices brought in or sent from other countries.
<ul> <li>Renovation creates large amounts of hazardous lead dust</li> </ul>	<ul> <li>Indoor firing ranges, reloading shotgun shells, bullet casting</li> </ul>	water as it passes through household plumbing.	Glazed ceramic cookware and food storage containers
<ul> <li>Exposures can occur at home, daycare, or a relative's home</li> </ul>	<ul> <li>Construction, painting, remodeling, or demolition</li> </ul>	Homes built before 1986 may have lead in plumbing.	<ul> <li>Exposure that occurred in another country</li> </ul>

# Lead Poisoning Prevention Tips for Families

- Keep children away from lead: Find lead sources in home. Keep children away from peeling, chipping paint and contaminated soil. Homes built before 1978 can be tested for lead by a certified inspector or using a test kit from a home improvement store.
- Wash hands, toys, and floors often: Wash children's hands often, especially before meals and sleeping. Wash toys often. Routinely wet wipe/wet dust floors, tables, and windowsills to remove lead dust.
- Renovate safely: Renovation in older homes can create hazardous lead dust. Make sure lead-safe work practices are used.
- Serve healthy foods: Provide regular meals and foods rich in iron, calcium, and vitamin C.
- Avoid products that might contain lead: Avoid using home remedies, spices, and cosmetics brought or sent from other counties. Avoid using imported pottery and ceramics for food and drinks if you don't know if it contains lead.

# **For More Information**

- Nebraska DHHS Childhood Lead Poisoning Prevention Program: Call 1-888-242-1100 (option 3) or www.dhhs.ne.gov/lead.
- Douglas County Health Department: Call 402-444-7825 or www.douglascountyhealth.com
- Greater Nebraska: Contact local public health department: Find LHD contact information at: www.dhhs.ne.gov/lhd.

#### References

AAP, 2016. Prevention of Childhood Lead Toxicity. Pediatrics. 2016;138(1):e20161493. <u>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/lead-exposure/</u> Advisory Committee for Childhood Lead Poisoning Prevention, 2012. Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention. <u>https://www.cdc.gov/nceh/lead/acclpp/blood\_lead\_levels.htm</u>

Pediatric Environmental Health Specialty Units, 2013. Recommendations on Medical Management of Childhood Lead Exposure and Poisoning. https://www.pehsu.net/\_Childhood\_Lead\_Exposure.html

National Toxicology Program. 2012. Monograph on Health Effects of Low-Level Lead. https://www.niehs.nih.gov/health/topics/agents/lead/index.cfm

Nebraska Department of Health and Human Services, Division of Public Health Nebraska Childhood Lead Poisoning Prevention Program: 1-888-242-1100 (option 3) Revised 3/25/19