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Bulletin No. 16 September 3, 2019

Blood Lead Testing Among Children Aged <72 Months — Alaska, 2013–2018

Introduction

Sources of lead exposure are common, and children aged <6 years are at increased risk for the neurotoxic effects of lead because their nervous systems are still developing.¹ No safe blood lead level (BLL) has been identified; even levels below the current federal reference level of 5µg/dL can affect cognition in children.¹ Following an updated Division of Public Health (DPH) policy in 2017,² child BLL testing is increasing statewide. This *Bulletin* provides an update on statewide childhood BLL testing.

Methods

We reviewed all BLL tests reported during 2013–2018 for children aged <72 months (<6 years). We calculated the annual percentage of children tested and the percentage of those tested with an elevated BLL (EBLL, ≥5µg/dL). We also reviewed regional testing data for 2017–2018. Population numbers were obtained from statewide census estimates for 2017.³

Results

During 2013–2018, 12,302 BLL tests were reported on 11,135 Alaska children aged <72 months, and 1,130 received at least two tests in separate years. The number of children tested each year has increased substantially (Table 1). Of the 12,302 tests, 2,577 (21%) were drawn at 0–12 months of age, 3,094 (25%) at 13–24 months, 1,561 (13%) at 25–36 months, and 5,070 (41%) at 37–71 months. Among all children tested, 146 (1.3%) had a BLL ≥5 µg/dL, 31 (0.2%) had a BLL ≥10µg/dL, 14 (0.1%) had a BLL ≥15µg/dL, and 1 (<0.01%) had a BLL ≥44µg/dL.

Table 1. Blood Lead Testing by Year Among Children Aged <72 Months — Alaska, 2013–2018

Year	# tested	Pop. aged <72 mo.	%* tested	% EBLL (N†) among tested
2013	668§	65,481	1.0%	1.8% (12)
2014	1,049	64,513	1.6%	2.2% (23)
2015	1,747	63,909	2.7%	1.4% (24)
2016	1,431	63,862	2.2%	1.3% (19)
2017	2,576	62,956	4.1%	1.6% (42)
2018	4,831	61,770	7.8%	1.0% (46)

*Percentage of Alaska children aged <72 months.

†Annual EBLL count includes children with EBLL in multiple years.

§Only EBLLs were required to be reported in 2013.

During 2017–2018, the percentage of children tested by region ranged from 4.2%–25.8%, and the proportion of children with EBLL by region ranged from 0.4%–1.7% (Table 2).

Table 2. Blood Lead Testing by Region Among Children Aged <72 Months — Alaska, 2017–2018

Region	# tested	Pop. aged <72 mo.	%* tested	% EBLL (N) among tested
Anchorage	2,194	26,760	8.2%	1.3% (28)
Gulf Coast	266	6,337	4.2%	0.4% (1)
Interior	963	10,361	9.3%	0.8% (8)
Mat-Su	950	8,608	11.0%	1.1% (10)
Northern	416	3,048	13.6%	1.0% (4)
Southeast	496	5,277	9.4%	1.2% (6)
Southwest	1,195	4,631	25.8%	1.7% (20)

*Percentage of Alaska children aged <72 months.

Discussion

During 2013–2018, 146 children were identified with an EBLL (i.e., ≥5 µg/dL), which represents 1.3% of the Alaska children tested during this period. The true prevalence of EBLL in Alaska children cannot be reliably estimated from these data for the following reasons: only a subset of Alaska children are tested,

testing is only required for Medicaid-eligible children, and surveillance data are not based on a random sample. Moreover, while the number of children tested in Alaska nearly doubled each year since 2016, the proportion of children tested annually in Alaska is still considerably lower than in the U.S. overall (e.g., 2.2% vs. 10.4% in 2016, respectively).¹ The estimated prevalence of EBLL in the U.S. was 0.5% (95% CI, 0.3–1.0) in 2013–2014.⁴

In most states, BLL testing is targeted geographically to children living in housing built before the 1978 ban on the residential use of lead-based paint. Because of the effectiveness of this screening strategy in identifying children with EBLL, the proportion of children tested with an EBLL in many states is higher than we see in Alaska (3.0% of children tested nationally in 2017 had an EBLL).¹ Although exposure to lead-based paint does occasionally occur in Alaska, most Alaska homes were built after the ban.⁵ Therefore, targeted geographic testing based on housing age is likely to be less effective than clinical risk-based testing that accounts for Alaska’s unique risk factors for lead exposure.^{6,7}

Since DPH does not currently conduct in-home environmental testing for lead, exposure source information is based primarily on telephone interviews with parents and clinicians. In a review of these interviews for tests during 2011–2018, the most common potential exposure sources identified were parent occupation or hobby, consumption of meat hunted with lead ammunition, living in a home built before 1978, and pica.⁷ Other potential sources were travel or immigration, fishing weights, lead ammunition, other products containing lead, lead plumbing, and aviation gas.⁷

Recommendations

- Health care providers should assess *all children* aged <18 years, particularly those aged <72 months, for exposure to lead and offer BLL testing to those with any risk factor. A lead exposure questionnaire is available at: <http://dhss.alaska.gov/dph/Epi/eph/Pages/lead/default.aspx>
- Health care providers should test BLL for all Medicaid-eligible children, regardless of risk factors, at ages 12 and 24 months, or before 72 months if not previously tested. Completion of a risk assessment without a BLL test does not meet the Medicaid requirement.
- Elevated (≥5µg/dL) capillary BLL tests *must* be confirmed with a repeat venous test at a certified laboratory. Venous specimens should be processed by the providers’ routine testing service. Clinical recommendations are available at: https://www.pehsu.net/Childhood_Lead_Exposure.html
- Per 7 AAC 27.014, laboratories and providers performing blood lead testing (venous and capillary) are required to report all BLLs to SOE within 28 days, and health care providers are required to report EBLLs (≥5µg/dL) within 7 days.

References

- CDC. Childhood Lead Poisoning Prevention Program. Available at: <https://www.cdc.gov/nceh/lead/about/program.htm>
- Alaska Epidemiology *Bulletin*. “Updated Policies of Blood Lead Screening for Medicaid-Eligible Children.” No. 6, March 15, 2017. Available at: http://www.epi.alaska.gov/bulletins/docs/b2017_06.pdf
- Alaska Department of Labor and Workforce Development. Population Estimates. Available at: <http://live.laborstats.alaska.gov/pop/>
- Tsoi MF, et al. Continual decrease in blood lead level in Americans: U.S. NHANES 1999–2014. *Am J Med* 2016;129(11):1213–18.
- U.S. Census Bureau. American Community Survey, 2012–2016 5-Year Estimates, Table CP04. Available at: <https://www.census.gov/acs/www/>
- Alaska Epidemiology *Bulletin*. “Blood Lead Surveillance in Children Aged <18 Years – Alaska, 1995–2012.” No. 4, April 8, 2014. Available at: http://www.epi.alaska.gov/bulletins/docs/b2014_04.pdf
- Bressler JM, et al. Blood lead surveillance and exposure sources among Alaska children. *J Pub Health Manag Pract* 2019;25:S71–S75. Available at: https://journals.lww.com/jphmp/Fulltext/2019/01001/Blood_Lead_Surveillance_and_Exposure_Sources_Among.12.as