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PREVENTION OPPORTUNITIES UNDER THE BIG SKY

Childhood lead poisoning: preventable exposure to lead continues in Montana

Lead-poisoning remains one of the most common environmental health problems affecting young children. It is preventable, but it continues to occur in Montana. Even small amounts of lead can adversely affect children's growth and development.(1) There is no safe blood lead level.

Data from the National Health and Nutrition Examination Survey (NHANES) illustrate a dramatic reduction in childhood lead poisoning in the US during the past four decades. In 1976-1980 the prevalence of blood lead levels (BLL) ≥ 10 $\mu\text{g}/\text{dL}$ in children aged 1 to 5 years was 88%.(2) By 1988-1991, after leaded gasoline was banned for road vehicles (in 1986), this prevalence was down to 9%. By 1999-2004, after home sellers and landlords were required (in 1992) to provide information about lead-based paint hazards in homes built prior to 1978 (the year lead-based paint was banned), the prevalence had decreased to 1%, and in 2007-2008 remained at 1%.(3,4)

However, blood lead levels < 10 $\mu\text{g}/\text{dL}$ can result in decreased IQ, academic failure and behavior problems. In 2012 the Centers for Disease Control and Prevention (CDC) recommended that physicians and parents take action steps for children with BLL ≥ 5 $\mu\text{g}/\text{dL}$.(5) This reference level was determined by using NHANES data to identify the level for which 2.5% of U.S. children aged 1 to 5 years had BLL exceeding the reference.

In order to assess the extent to which the NHANES data reflect the lead exposure experience of Medicaid enrolled children in Montana, the DPHHS Healthy Homes and Lead Poisoning Prevention Program (HHLPPP), in conjunction with nine local health departments conducted a field study. The results of that study and important action steps are described in this issue of *Montana Public Health*.

The field study The HHLPPP used Medicaid enrollment files to identify children aged 1 to 5 years living in 11 counties in Montana. Local health departments participating in this assessment were able to contact the parent or responsible adult of 1051 of these children (43% of the sample initially identified). Of those contacted, 584 (56%) agreed to participate. From these children a capillary blood test (using LeadCare II technology) was performed in the home and filter paper blood spot collected for testing at the Montana Public Health Laboratory. Five hundred seventy-two valid filter paper tests were performed. For each child found to have a BLL ≥ 5 $\mu\text{g}/\text{dL}$ an investigation of potential lead source(s) was conducted and a recommendation provided to see the child's physician for diagnostic assessment and venous blood testing.

The BLL results for Montana children Consistent with the NHANES data, 3% of these Montana children had BLL ≥ 5 $\mu\text{g}/\text{dL}$. One in four of the children had BLL ≥ 1 $\mu\text{g}/\text{dL}$ detected. The table describes the proportion of children with certain characteristics who had an elevated BLL or detectable BLL. The highest BLL detected was 34.7 $\mu\text{g}/\text{dL}$ and the characteristic associated with the highest prevalence of detectable BLL was living in a house with peeling paint.

Table. Prevalence of detectable blood lead levels by selected characteristics, Montana, 2012

		Prevalence (%)	
		Reference *	Detectable ‡
Total		3.0 (17/572)	23.8 (136/572)
Sex	Male	3.1 (9/291)	22.7 (66/291)
	Female	2.9 (8/281)	24.9 (70/281)
Race	White	2.9 (14/490)	23.7 (116/490)
	Other/unknown	3.8 (3/79)	24.1 (19/79)
House built	before 1978	2.9 (10/341)	22.9 (78/341)
	after 1978	2.3 (2/87)	28.7 (25/87)
	age unknown	3.5 (5/144)	22.9 (33/144)
Peeling paint	Yes	4.0 (6/149)	30.9 (46/149)
	No	2.5 (10/407)	21.4 (87/407)
Repairs/renovation exposure	exposure	2.7 (4/148)	25.0 (37/148)
	No exposure	1.9 (8/414)	22.2 (92/414)
Tobacco use	in home	3.3 (2/60)	25.0 (15/60)
	Not in home	2.8 (14/506)	23.3 (118/506)
	used in car	3.3 (3/90)	27.8 (25/90)
	Not in car	2.8 (13/472)	22.7 (107/472)

* ≥ 5 $\mu\text{g}/\text{dL}$ ‡ ≥ 1 $\mu\text{g}/\text{dL}$

recommend blood lead testing for Medicaid children.(7)

Lead Screening Guidelines The CDC recommends blood lead testing for children aged one year and again at age two years who are identified as high risk based on results of a personal risk questionnaire. Children aged 3-5 years not previously tested and determined to be at risk should also be tested.(6)

Children enrolled in Medicaid should be considered at risk for lead poisoning. The Centers for Medicaid and Medicare Services Early and Periodic Screening, Diagnostic, and Testing (EPSDT) guidelines strongly

Risk Factors for childhood lead poisoning Lead has been detected in many items and may not be limited to common sources like old paint, contaminated soil, and water from leaded pipes. Household items like pottery, children's toys, jewelry, and furniture, have been sources of lead exposure. The Consumer Product Safety Commission (CPSC) website (www.cpsc.gov) lists hazardous products including those containing lead that have been recalled.

Recommendations for Healthcare Providers

- Assure that all children aged 1-5 years are assessed for potential lead exposure using a standardized risk assessment tool
- Assure that children enrolled in Medicaid have had two blood lead tests before their 6th birthday
- Talk to parents about the risks of lead poisoning and how to prevent lead poisoning including:
 - Clean with a wet mop areas that may have paint chips or peeling paint.
 - If renovating an older home use a certified renovator trained by EPA-approved training providers.
 - If potential exposure to lead from workplace or hobby wipe shoes on mats when entering a home.
 - Remove recalled toys, clothing, and jewelry from the home.
- Refer families for home lead remediation, when necessary

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