Mississippi Lead Poisoning Prevention and Healthy Homes Program (LPPHHP)

2012-2016 Childhood Lead Surveillance Report

Mississippi State Department of Health

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Introduction

The surveillance findings presented in the 2012-2016 Lead Poisoning Prevention and Healthy Homes Program (LPPHHP) Surveillance Report are based on reported blood lead test data from providers and laboratories for children less than 72 months of age in Mississippi.

The goal of the LPPHHP is to reduce the number of children exposed to lead and environmental hazards through strategies focused on increasing public awareness of risk of lead poisoning and environmental hazards and through collaboration with community and faith-based organizations to facilitate community awareness and prevention activities.

Overview

Lead poisoning is the nation's number one preventable environmental health problem facing children today. Lead exposure in children can cause permanent neurologic damage and behavioral disorders. Studies show that children with high blood lead levels ≥70µg/dL can have severe neurologic problems, including seizures, comas, and even death. Even blood lead levels as low at 10µg/dL have been shown to affect IQ, ability to pay attention and academic achievement. The damage from lead exposure cannot be corrected. While the number of children with elevated blood lead levels (EBLLs) has decreased over the years, the LPPHHP continues to identify cases of EBLLs annually. The sources of lead exposure continue to be deteriorated lead-based paint and lead dust but other exposure sources that have been identified consist of vinyl-plastic mini-blinds, job and work related, home remedies, keys, and Mardi Gras beads.

The Centers for Disease Control and Prevention (CDC) has concluded that even low blood lead levels can cause lifelong health effects. CDC uses a reference level of 5µg/dL to identify children who have been exposed to lead and who require care coordination.

Background

According to the Mississippi State Department of Health's (MSDH) List of Reportable Diseases and Conditions, blood lead poisoning is a Class 2 and Class 3 Reportable Disease; therefore labs, clinics, and hospitals in Mississippi are required to report all blood lead levels for children less than 6 years of age to the LPPHHP. All providers and laboratories performing blood lead testing must report the lead level results to the LPPHHP.

The Blood Lead Level testing is targeted, rather than universal, and should be done at the following age intervals:

- Routinely, at age 12 and 24 months if Medicaid-eligible

- At any time between ages 6-72 months if risk assessment indicates possible exposure
- Annually (ages 6-72 months) with risk factors
- Anytime when medically indicated in work-up of some unexplained illnesses

Any child identified with a confirmed EBLL above the CDC's reference value of 5µg/dL should be monitored and retested according to the follow-up guidelines below.

Lead Level	Follow-Up Guidelines	LPPHHP Role
5-14 µg/dL	Repeat BLL test every 3 months, until 2 venous results <5 or 3 results <15, then annually	Telephone counseling to include lead sources, importance of handwashing, dietary concerns and materials disseminated through the mail
15-19 µg/dL	Repeat BLL test every 3 months, until 2 venous results <5 or 3 results <15, then annually. If BLL remains 15-19 after 6 months, repeat annually	Telephone counseling, home visit and environmental assessment
20-44 µg/dL	Repeat BLL within 1-2 month intervals for 6 months until these 3 conditions are met: BLL has remained < 15 for at least 6 months, and lead hazards have been removed, or child lives in a lead safe environment and no new exposure, then annually	Telephone counseling, home visit and environmental assessment
45-69 µg/dL	Repeat BLL per physician's/clinician's order	Telephone counseling, home visit and environmental assessment; referral to toxicologist
≥70 µg/dL	Repeat BLL per physician's/clinician's order	Telephone counseling, home visit and environmental assessment; referral to toxicologist

Findings

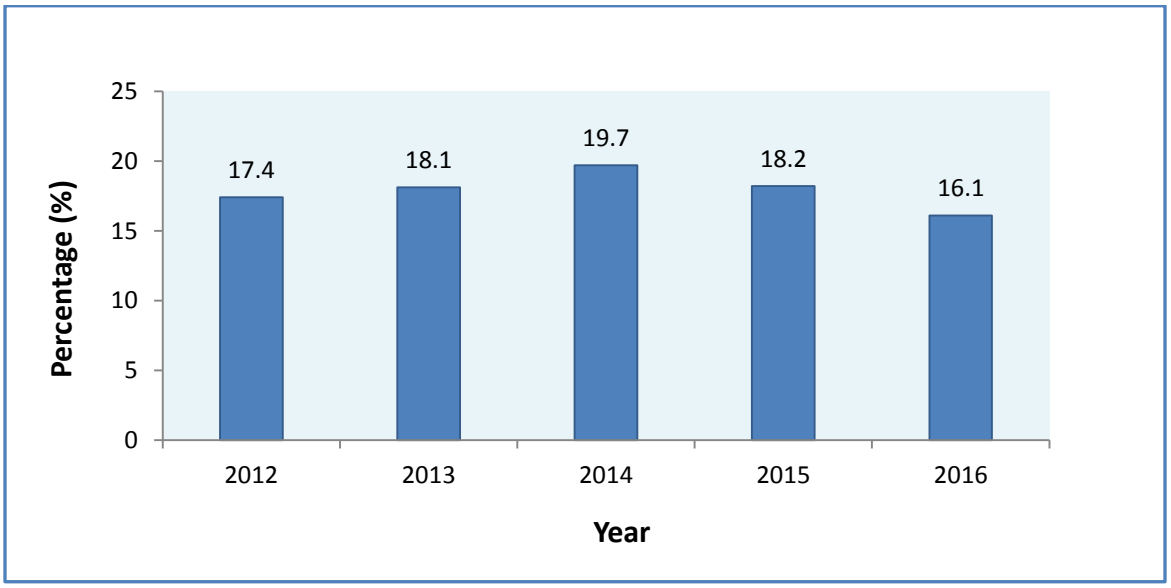
Screening rates in Mississippi fluctuated during 2012-2016, with the highest rate of 19.7% in 2014, and the lowest rate of 16.1% in 2016. Mississippi has seen a steady decline in the percentage of children with confirmed EBLLs ≥5µg/dL from 382 (0.90%) in 2009 to 234 (0.56%) in 2015 among children tested. However there was a slight increase from 2015 to 2016 (255, 0.69%).

From 2012-2016, the program provided 88 children with a home visits and environmental assessments. Of this total, 56 children were identified with a decrease in blood lead level after the intervention. The program conducts a home visit and environmental assessment at any place the child spends at least six hours a week (primary home, Head Start or other child care facility, relative's home).

Data Presentation

Figure 1 and Table 1 present the number and percentage of children tested from 2012 to 2016 in Mississippi.

Figure 1



During 2012-2016, a total of 210,720 children less than 6 years of age were tested for lead poisoning. The average screening rate was 17.9%.

Table 1

	2012	2013	2014	2015	2016	Average
Number of Children Tested	42,623	43,401	46,101	42,067	36,528	**42,144**
Population < 6 Years of Age	245,446	239,441	234,515	231,834	227,184	**235,684**
Percentage of children Tested (%)	**17.4**	**18.1**	**19.7**	**18.2**	**16.1**	**17.9**

Screening rates fluctuated during 2012-2016, with the lowest rate of 16.1% in 2016, and the highest rate of 19.7% in 2014 (Figure 1 and Table 1).

Figure 2 and Table 2 present the number and percentage of children with confirmed EBLLs from 2012 to 2016 in Mississippi.

Figure 2

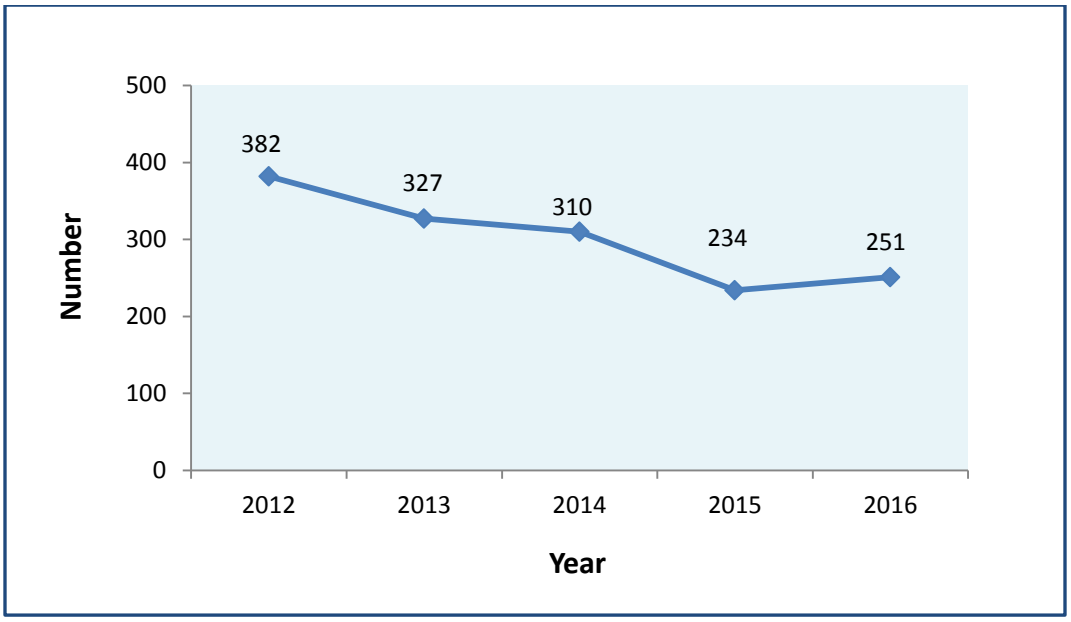


Table 2

	2012	2013	2014	2015	2016	Overall
Number of Children with EBLLs ≥5 µg/dL	382	327	310	234	251	1,504
Number of Children Tested	42,623	43,401	46,101	42,067	36,528	210,720
Percentage of Children with EBLL (%)	**0.90**	**0.75**	**0.67**	**0.56**	**0.69**	**0.71**

Mississippi decreased steadily in percentage of children with confirmed EBLLs ≥5 µg/dL from 7,382 (0.90%) in 2009 to 234 (0.56%)in 2015 among children tested. In 2016, 251 children (0.69%) had confirmed EBLLs ≥5µg/dL, which indicates an increase since 2015 (Figure 2 and Table 2). Overall, 1,504 EBLLs were detected during the 5 year period. The average percentage of children with EBLLs was .71% during the 5 years.

Figure 3 and Table 3 present the number of children in each of the EBLL ranges for 2012 to 2016.

Figure 3

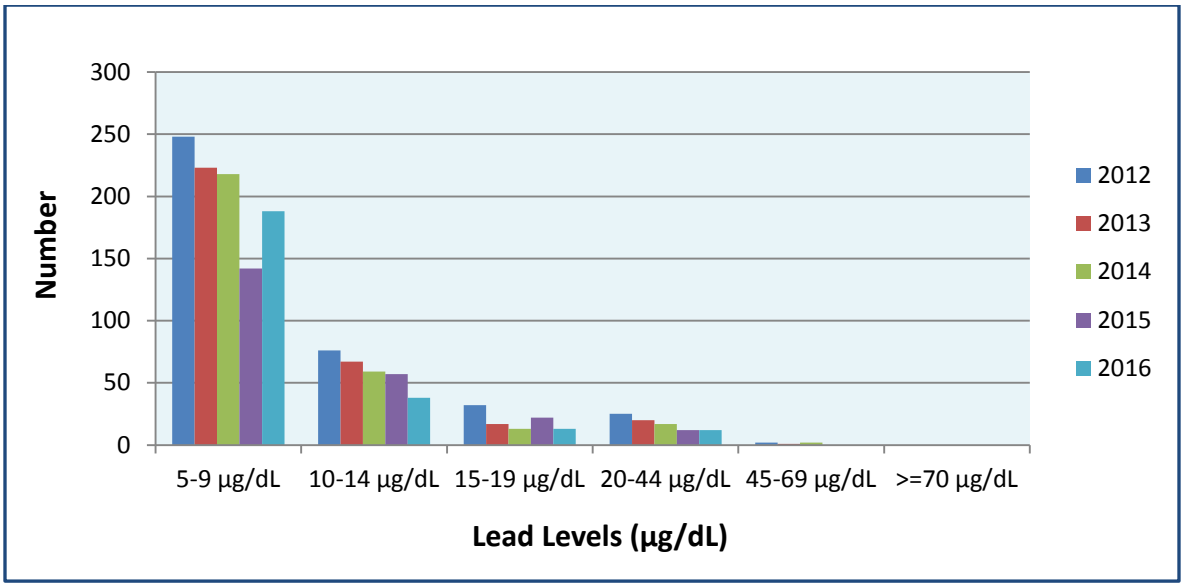


Table 3

EBLL	5-9 µg/dL	10-14 µg/dL	15-19 µg/dL	20-44 µg/dL	45-69 µg/dL	≥70 µg/dL	Total
2012	247	76	32	25	2	0	382
2013	222	67	17	20	1	0	327
2014	219	59	13	17	2	0	310
2015	144	56	22	12	0	0	234
2016	188	38	13	12	0	0	251
Total	1020	296	97	86	5	0	1504

The number of children with EBLLs in the ranges of 5-9, 10-14, 15-19, 20-44 and 45-69µg/dL has decreased since 2012; however, there were 44 more children with EBLLs in the range of 5-9µg/dL in 2016 than in 2015 (Figure 3 and Table 3).

Percentage of Children Less than 6 with Confirmed EBLLs (≥5) by Gender 2012-2016

Figure 4

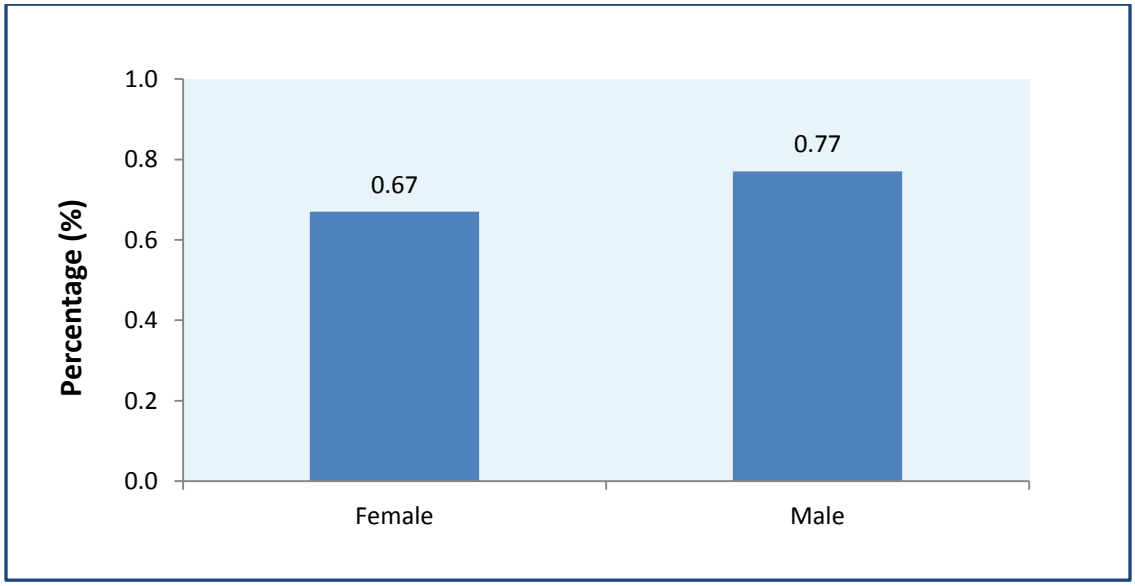


Table 4

Gender	Male	Female
EBLL	817	684
Tested	105,780	102,352
Percentage (%)	**0.77**	**0.67**

The percentage of children less than 6 who had EBLLs was significantly higher among boys (0.77%) compared to girls (0.67%) during 2012-2016* (Figure 4 and Table 4).

*Chi-Square test was used to test the difference on EBLL by gender.

Percentage of Children less than 6 with Confirmed EBLLs (≥5) by Age, 2012-2016

Figure 5

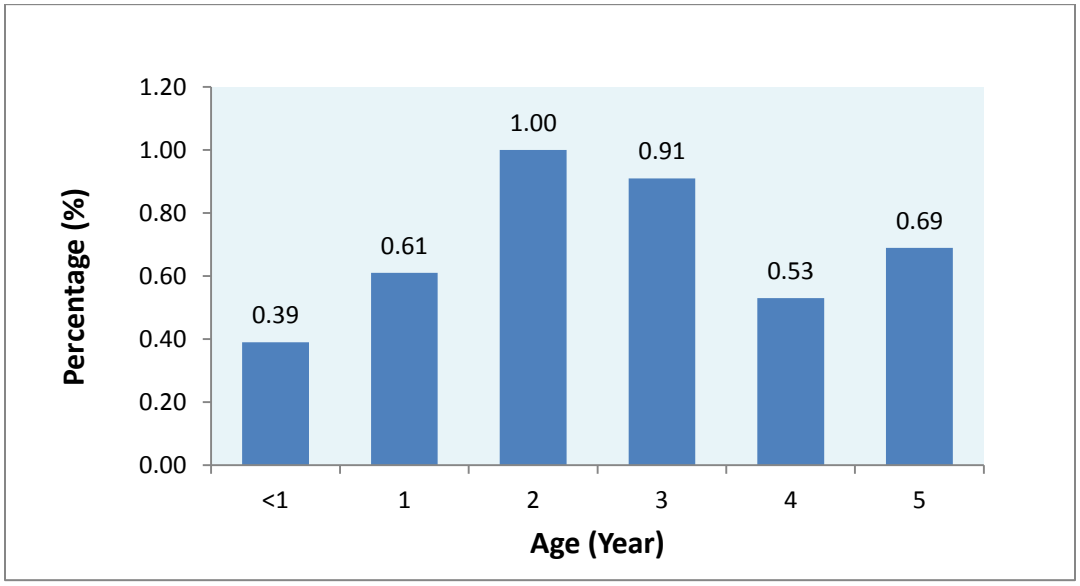


Figure 5

Age (Years)	<1	1	2	3	4	5	Overall
EBLL	49	392	451	292	226	94	1504
Tested	12,478	64,651	45,226	32,187	42,566	13,612	210,720
Percentage(%)	**0.39**	**0.61**	**1.00**	**0.91**	**0.53**	**0.69**	**0.71**

The highest percentage of children with confirmed EBLLs were 2 years of age (1.00%), followed by3 years of age (0.91%) (Figure 5 and Table 5).

Percentage of Children Less than 6 with Confirmed EBLLs ≥5 µg/dL by Medicaid Status, 2012-2016

Figure 6

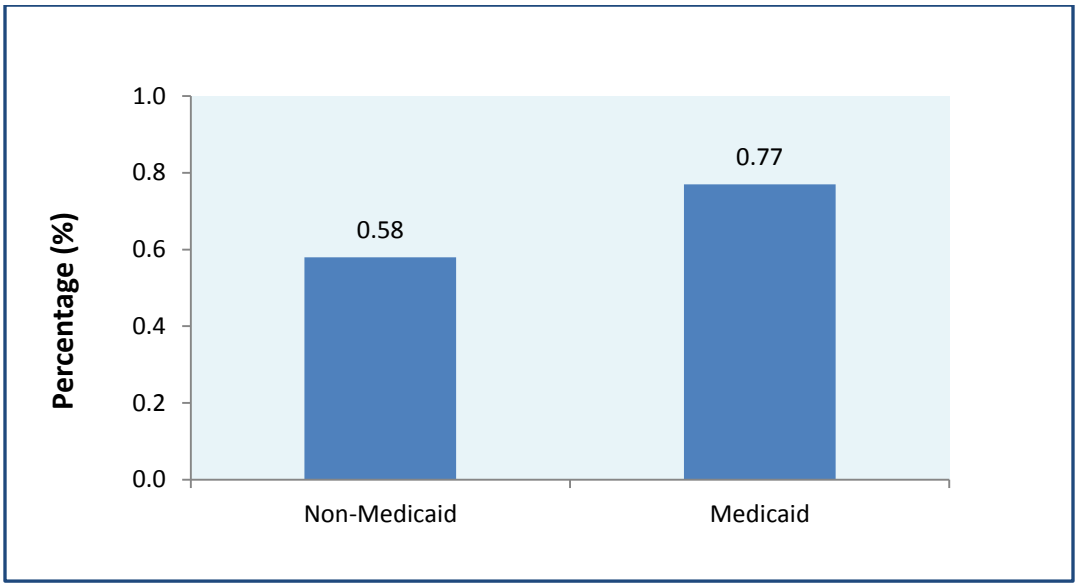


Table 6

Medicaid Status	Medicaid recipients	Non-Medicaid recipients
EBLL	1,122	382
Tested	145,413	65,307
Percentage (%)	**0.77**	**0.58**

The percentage of children less than 6 who had EBLLs was significantly higher among Medicaid recipients (0.77%) compared to Non-Medicaid recipients (0.58%) during 2012-2016** (Figure 6 and Table 6).

*Chi-Square test was used to test the difference on EBLL by Medicaid status.

Number of Children less than 6 with confirmed EBLLs (>=5 µg/dL) in Mississippi, 2012-2016

Map 1

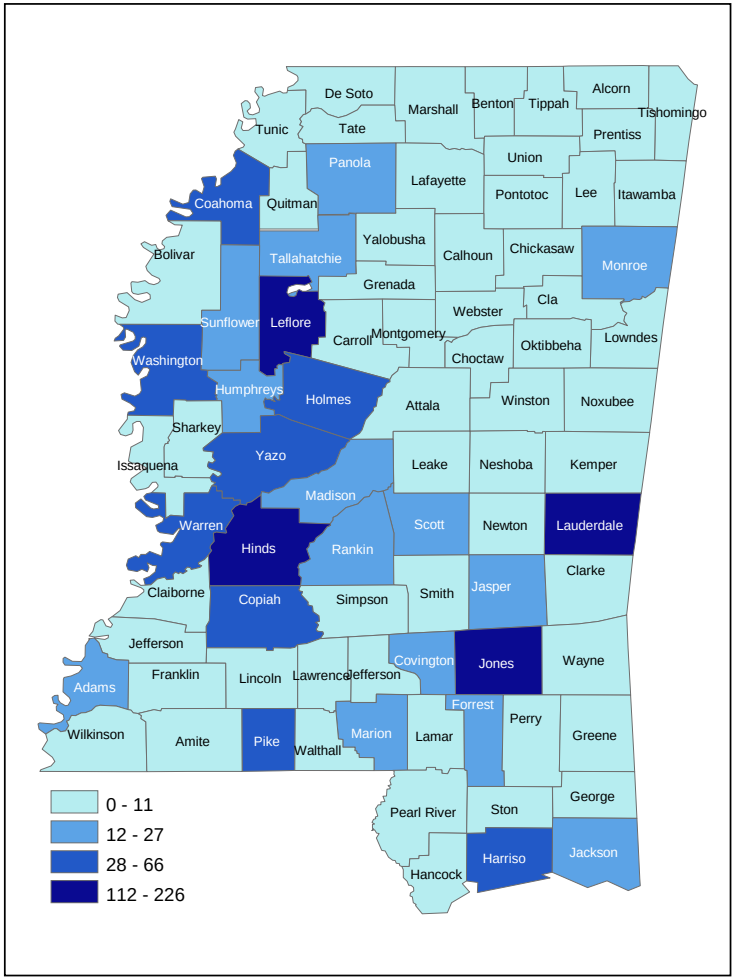


Table 7

County	Number
Hinds	226
Jones	173
Lauderdale	128
Leflore	112
Harrison	66
Pike	43
Holmes	38
Warren	35
Yazoo	35
Washington	34

Map 1 presents the distribution and number of children with EBLLs by county in Mississippi.

Table 7 presents the list of counties with the highest number of EBLLs during 2012-2016.

Case Report 2015

The program was notified of a one-year old child identified with a blood lead level of 43µg/dL (very close to level >45 µg/dL for required pharmacotherapy) in Laurel, one of the program's 23 high-risk counties in Mississippi. Working with the child's primary care provider and the bilingual translator from the clinic, the program was able to schedule a home visit and environmental assessment for this child to determine what (if any) lead hazards were present in the child's environment. The family lived in an apartment in a 1950 multi-family rental house and had access to the shared kitchen.

During the visit, with help from the accompanying translator, program staff was able to identify and test areas where the child had been seen touching or playing. The areas identified with the highest lead concentrations were: the parent's bedroom windowsill, the bedroom wood floor, the bathroom wood floor, and the exterior front porch concrete ledge by the main apartment entrance. There was no use of lead containing home remedies or well water.

Low-cost and no cost recommendations were made on what the family could do to reduce the child's exposure to the lead dust included: wiping down the windowsill with soap and water to remove any lead dust and covering the windowsill with contact paper or plastic so the child doesn't come in contact with the peeling paint; wet mopping the wood floors or using a Swiffer instead of dry sweeping; covering the concrete ledge with a concrete sealer to seal in any of the lead dust that is present; and removing shoes before going inside from the outside to prevent lead dust from being tracked into the home. In addition, the program also talked to the family about the following: green cleaning with baking soda and vinegar; carbon monoxide poisoning; pests; and ventilation issues.

Additionally, after the visit, per program policy and procedures, a letter was sent to the MSDH District Health Officer and the City of residence notifying them about the lead hazards found that may pose a health hazard to the community. The City's Inspection Department sent a complaint letter to the owner of the property notifying him that his property was in one or more violations of the International Property Maintenance Code as adopted by the City. The owner of the property was to either abate the property or would face multiple citations. It was subsequently deemed that the home was unsafe and must be vacated.

This child's blood lead level has decreased after the home visit and upon follow-up, after relocation, has continued to go down. On most recent testing, blood lead level had dropped to 13 µg/dL. Recommendations are to continue annual blood lead level screens, monitor developmental growth in medical home setting, and continue preventive strategies.

Program Priorities

- Increase the number of children who receive a confirmatory venous within the specified time frame listed in the LPPHHP Case Management Plan
- Continue data matching with Medicaid to identify the following: children who should have had a lead test but did not; children who had a claim for a lead test submitted but we do not have the test; and to make sure that children are being tested at 12 and 24 months of age as required by the Medicaid EPSDT requirements
- Continue to analyze data to identify new high-risk counties for lead poisoning
- Continue partnerships with community and faith-based organizations to provide outreach on lead poisoning and healthy home issues
- Increase primary prevention initiatives

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