

**Updates to the**  
***Maine Statewide Plan for***  
***Childhood Lead Screening***

March 8, 2010

**Childhood Lead Poisoning Prevention Program**  
**Division of Environmental Health**  
**Maine Center for Disease Control & Prevention**  
**Department of Health and Human Services**

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## 1. Introduction

In 2002, the Maine legislature passed a bill revising the Maine Lead Poisoning Control Act to contain a mandate for blood lead screening tests for all children at 1 and 2 years of age, unless the provider determines that the child is not at risk for lead exposure. The statute included language reiterating the federal mandate to screen all Maine Care [Medicaid] enrolled children at 1 and 2 years of age with a blood lead screening test. This law provided the framework and foundation for Maine's statewide lead screening plan. The choice of screening at ages 1 and 2 was based upon random national blood lead data from the National Health and Nutrition Examination Survey (NHANES) III suggesting that 1 and 2 year old children are at the most vulnerable ages for lead poisoning. Determining the risk status of the child is done with the lead risk assessment questionnaire reproduced below.

### **Lead risk assessment questionnaire**

1. Does your child spend more than 10 hours per week, in any house built before 1950?
2. Does your child spend more than 10 hours per week in any house built before 1978 that was renovated or remodeled within the last 6 months?
3. Does your child spend time with an adult whose job exposes him or her to lead? (Examples: painting, construction, metal workers including metal recyclers)
4. Is your child enrolled in MaineCare?

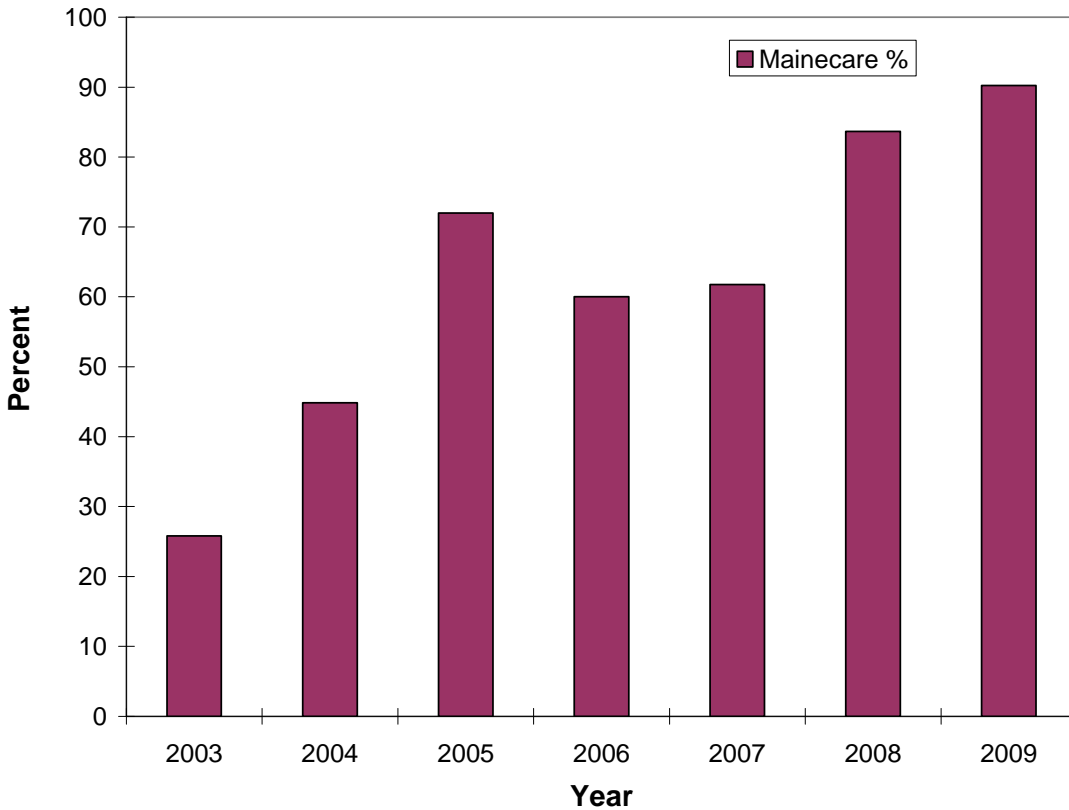
If a child's parent answered "yes," or "does not know", to one or more of these questions, the child should be given a blood lead test.

A 2009 Morbidity and Mortality Weekly Report<sup>1</sup> suggests that newer NHANES data showed no significant difference in percent of EBLs based on Medicaid enrollment status or income level. The recommendation from the National CDC is that mandatory screening of children on Medicaid should now be based on state level data. The Maine specific data, which seems to be changing over time, suggests Medicaid children now make up the majority of our children whose blood lead levels are at or above 15 ug/dL (the level at which intervention occurs). For that

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<sup>1</sup> Recommendations for Blood Lead Screening of Medicaid Eligible Children Aged 1-5 Years: An Updated Approach to Targeting a Group at High Risk. MMWR. 2009

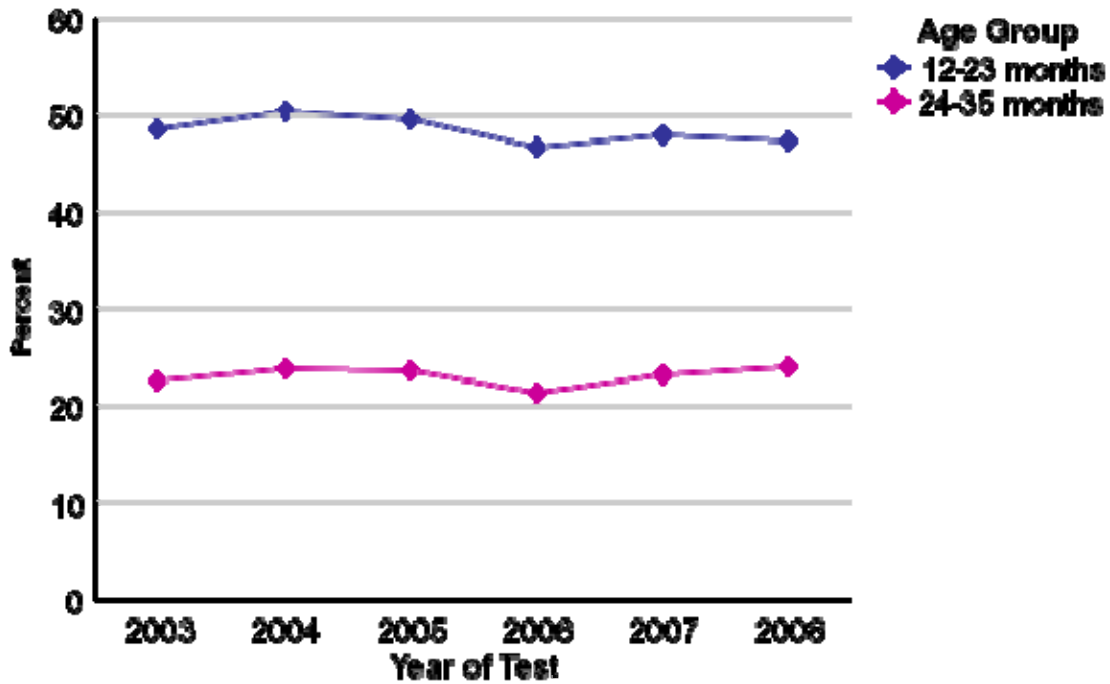
reason, the MCLPPP program will continue to support screening of all MaineCare children as per state law.



**Figure 1: The percent of children with BLLs >15 ug/dL enrolled in MaineCare**

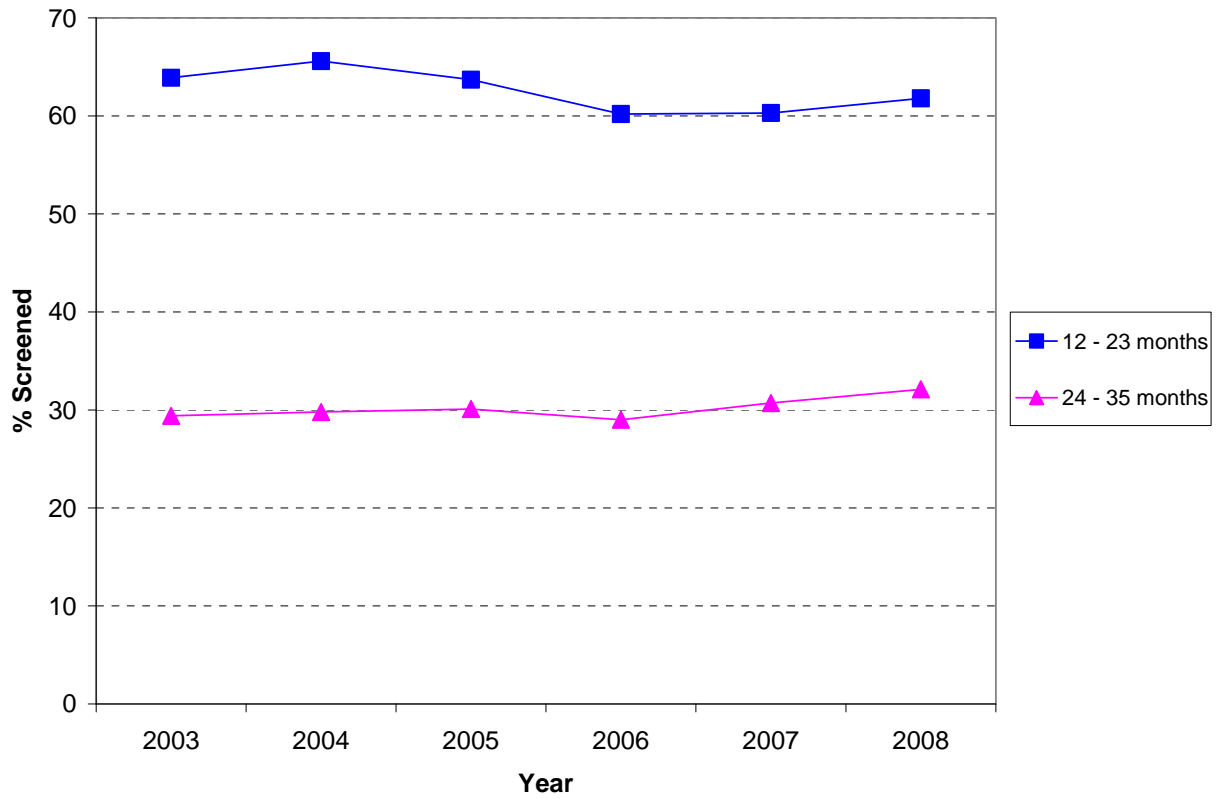
## **2. Data on Current Screening Rates**

Since 2003, the percent of 1 year olds who have been screened has remained stable at 50%. Similarly, screening rates for 2 year olds has remained stable at 25% (Figure 2). If the screening rate is defined as children having at least 1 blood test before the age of 3, the rate is much higher – 67% statewide.



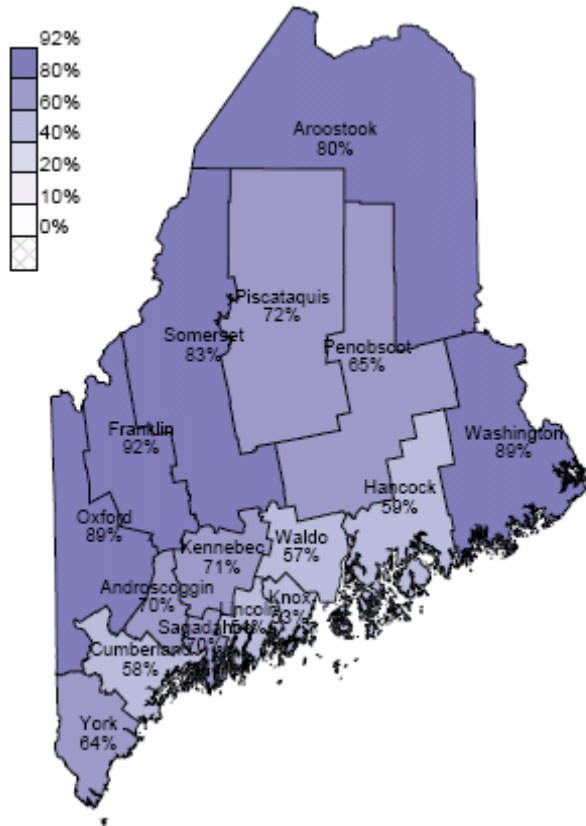
**Figure 2: Statewide Blood Lead Screening Rates by Age Group**

A better measure of successful screening is to look at the sub population of children on MaineCare. As mentioned previously, all children on MaineCare should be tested at both age 1 and at age 2. Figure 3 shows that for the age categories of 12 to 23 months and 24 to 36 months the screening rates have been consistent around 60% and 30%. This measure does NOT capture those children screened at 9 months of age, but this does provide a measure comparable to Figure 3.



**Figure 3: Screening Rates for Children enrolled in MaineCare by Age Group**

As might be expected, the screening rates also vary geographically. Figure 4 shows the rates of blood lead screening for children under 36 months old, by county for children born in 2003.



**Figure 4: Blood Lead Screening Rates for children under 36 months old by County for the 2003 birth cohort.**

This map shows that there are certain regions (such as Aroostook County at 80%) that have relatively high rates of screening (above the state average of 67%) vs. other regions such as the Cumberland County at 58% which fall below the state average for this birth cohort.

### 3. Activities Promoting Increased Screening Rates

There are several ongoing and planned activities which are expected to increase screening rates – in particular for high risk individuals or locations. Some of these activities include:

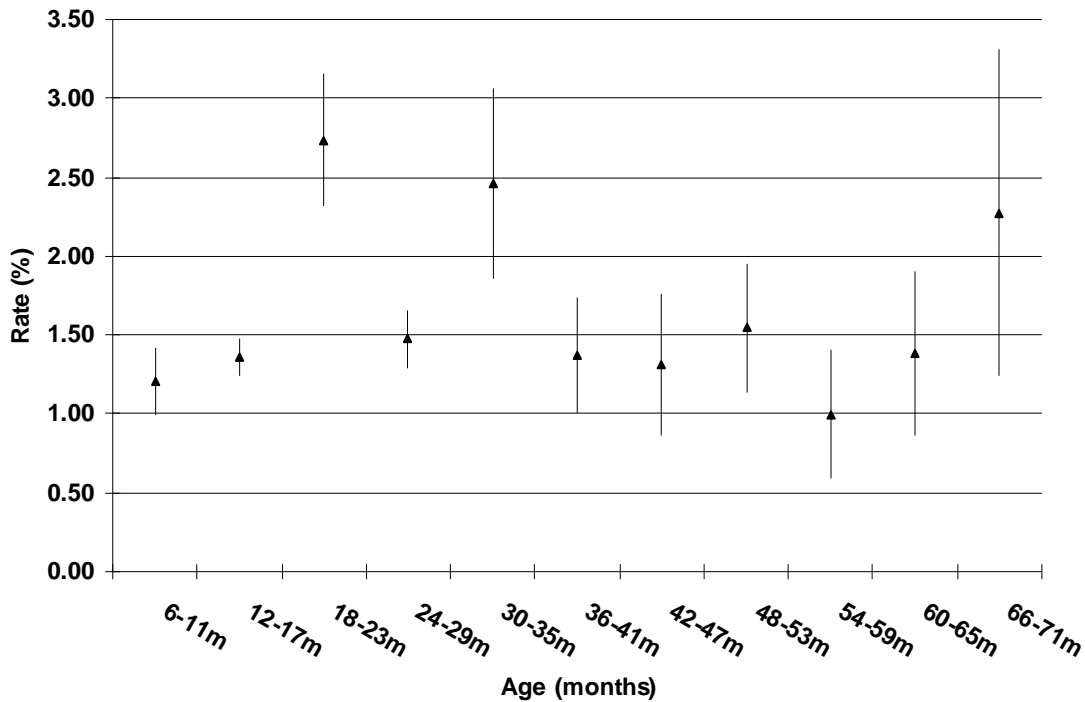
- a) Collaboration with WIC to combine blood lead screenings with hemoglobin screenings;
- b) Downloading blood lead data into IMMPACT2, the state’s immunization registry, allowing doctors access to lead blood test results and histories;
- c) Education and Outreach, including direct mailings and outreach to parents of 1 and 2 years olds in the state and outreach to providers;

- d) Collaboration with MaineCare to identify MaineCare specific screening rates (including by provider) and ways to promote screening in the MaineCare population;
- e) Identification of high risk locations and targeted outreach to those locations to improve screening rates;
- f) Updating and evaluating the risk assessment questionnaire.

#### **A. Collaboration with WIC to combine blood lead screenings with hemoglobin screenings**

An effort currently being evaluated at the MaineCDC is the combining of WIC screenings for hemoglobin with screenings for lead. One motivation behind this effort is to increase blood lead screening rates among a target population as there is significant overlap between the WIC and MaineCare populations. In addition, combined screenings would reduce the number of times blood gets drawn from a child, addressing a barrier to blood lead screening. Currently a child gets a hemoglobin test at a WIC office. Shortly thereafter they are asked to get a blood lead test, often having to travel to another location to get the blood drawn. It is thought that parents often don't follow through with this request because they do not distinguish between the anemia and the lead test, they know their child has just been tested, or because they often must travel offsite to get the blood drawn. By combining these tests a client will need to get the blood drawn once, rather than multiple times per year. It is hoped that by combining these tests, medical providers and WIC staff will both be aware if tests were done and coordinate efforts to obtain blood lead tests of untested children.

Currently, WIC requires a blood test for anemia annually. Combining anemia tests with a blood lead draw for the first three years would be convenient for both the parents and the health care providers. Figure 5 shows the rates of EBLs among children screened by age group. This data suggests appropriate times for screening may be at 9 to 12 months, 18 to 24 months, and 30 to 36 months – times when the screening for anemia already occurs. These figure also suggests that the current screening practices (not based on recommendations, but what appears to be happening, meaning 1 test by the age of 3) is not adequate. It is hoped that this effort will both increase blood lead testing rates among the MaineCare population (by making it easy) and increase blood lead testing age ages 1 and 2.



**Figure 5 Rates of EBLL by Age Group<sup>2</sup> in Maine 2003 to 2007**

EBLL = confirmed elevated blood lead level: blood lead level  $\geq 10\mu\text{g}/\text{dl}$

EBLL Rate (%) = (number of children with EBLL/number of children screened)\*100

Implementation of this activity is tied into the following project – making blood lead data available to medical professionals through the state’s online immunization registry.

### **B. Downloading Blood Lead Data into IMPACT2**

Making data available to medical providers online would address several barriers to screening. For example, it would allow medical providers to easily determine if a blood lead test was

<sup>2</sup> Children may have received a screening test for lead multiple times. These data represent the number of children with EBLL within an age group. Children may be counted once for each screening test completed in an age group, therefore a child may be represented in more than one age group. Data

Source: [TestLabResults\\_09042008](#), Maine Childhood Lead Poisoning Prevention Program (MCLPPP)



ordered, but not fulfilled, would allow them to evaluate whether a child has had an initial test or a followup test and review those results, and it would allow a practice to identify those children who are due a test, but who have not received a test. The best model for providing this service to medical providers is the Maine Immunization Program's ImmPact2 immunization registry.

The Maine Immunization Program (MIP) is a national leader in Immunization Information System/Registry development (ImmPact2). ImmPact2 is currently used to track vaccine use in clients across the State of Maine. It tracks clients, vaccine inventory, performs inventory transactions, tracks program activities, Office of MaineCare Well Child services, obesity, and performs public health reporting, all within a secure and confidential environment. Currently, approximately 40% of Maine pediatricians use ImmPactII, and they serve approximately 60% of the pediatric population of the state.

Given the strength and track record of ImmPact2 in providing a data service to health care providers, the MCLPPP program is interested in using this web based application to provide blood lead data for health care providers. Not only would this address the barriers to testing identified above, but it would provide MCLPPP the ability to evaluate practice by practice screening rates so outreach activities could then be targeted to practices with lower screening rates. The goal would be to develop a module similar to the immunization records, which would include blood lead history over time (as well as possibly hemoglobin results, building on the linkage described previously). As stewards of the blood lead data, rather than repeat the data in multiple locations ImmPact2 would be linked to MCLPPP's source data to provide a "view" of that data. It is estimated that the development of this module would cost approximately \$50,000. The MCLPPP program is identifying sources of funding for this project. This project will be linked to combined hemoglobin and lead screening via WIC. Data for both screens are likely to be uploaded and displayed in one module. This will have the advantage of emphasizing the linkage between the two tests.

### **C. Outreach and education**

There are several ongoing outreach activities initiated by MCLPPP that will promote screening rates. Many of these activities, however, are going to be revisited in greater detail as an outreach plan specific to health care providers is developed over the next year.

### *Encouraging lead screening among parents*

One way to increase screening rates is to make parents aware of the importance of screening. There are several planned and ongoing activities on this front. A major effort among the MeCDC is the distribution of a mailer to parents of 1 and 2 year olds (Figure 6). In high risk geographic areas a version of the mailer that offers a free lead dust test kit was distributed. Both mailers (with and without lead dust test kits) offer information on blood lead screening and information on how to prevent lead poisoning. So far a total of approximately 25,000 of these mailers have been distributed (5,000 offering a lead dust test kit and 20,000 without a lead dust test kit). Soon, this will be expanded to all parents of 1 year olds across the state on an annual basis. A version of the mailer is also being distributed to OB/GYNs and Certified Nurse Midwives to include in new pregnant patient packets. We expect the mailer to increase awareness of lead. Offering free lead dust testing is a way to get parents interested in lead poisoning prevention and, at the same time, the need to test their children for lead exposure – particularly if lead dust test results are high.

Your **home** could be putting your child at risk for

# Lead Poisoning



Caring..Responsive..Well-Managed  
We are DHHS.



5/17/09 11:55:41 PM

**Figure 6: Mailer to Parents of 1 and 2 year olds**

To date there have been a total of 268 requests for more information by recipients of the mailer. Of those responses, 145 have asked for more information on screening their child for lead. The educational piece that is distributed to meet those requests is shown in Figure 7.

## Testing your Child for Lead

What to expect at the doctor's visit

Lead Tipsheet #1



### **A blood lead test is the only way to know if your child has lead in them.**

Toddlers at ages 1 and 2 are more likely to be exposed to lead. They can get lead dust or chips into their bodies because they often put their hands, toys or other things in their mouths. They also play where lead dust may be - like floors and near window sills.

Lead was used in paint. Paint bought today does not have lead in it. Older houses often still have old lead paint in them. Dust from old paint is the most common way children get lead poisoning.

### **Figure 7: Tipsheet for parents on blood lead screening**

This tipsheet was developed both to fulfill requests for more information about screening, but also because formative research with parents indicated confusion about what to expect when they take their child to have a blood lead test performed. The piece was developed using easy to read techniques. This piece has also been distributed to our community partners in the high density areas for use at events and targeted outreach.

#### ***Outreach to medical providers and partners to improve screening rates***

There are several initiatives within the MCLPPP program that are specific to medical providers and partners. There are two broad categories by which MCLPPP provides outreach to medical providers and partners. One is via trainings, the second is by producing materials for distribution and use.

The MCLPPP staff offers training to other professionals, including public health nurses and Women, Infants & Children (WIC) program staff who work with parents of young children. The training consists of the rationale and timing for lead screening, how to assess for individual risk of lead poisoning, and methods parents can use to decrease lead exposures. The nurses and WIC staff assess the level of risk with each encounter (questions about lead are built into their intake forms) and encourage the parents to request lead screening tests from their child's healthcare provider when appropriate.

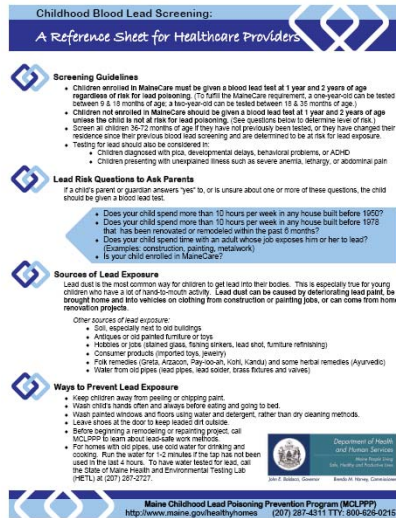
MCLPPP also maintains a presence at provider conferences – often staffing a booth displaying materials we have to offer or new trends seen in blood lead poisonings in the state.

Additionally, the MCLPPP health coordinator also personally contacts the primary care provider of every child identified with a confirmed blood lead level of 15+  $\mu\text{g}/\text{dl}$  to coordinate follow-up care and offer information on public health interventions. This personal contact provides the basis for an ongoing relationship that encourages providers to continue their screening efforts.

Outreach efforts to medical providers and partners include a revised website:

[www.maine.gov/healthyhomes](http://www.maine.gov/healthyhomes) , which has a section specifically for medical providers. In that section there is information on the guidelines for lead screening, the lead risk assessment questionnaire, and clinical management recommendations. Additionally, the Environmental Public Health Tracking Program has developed an Environmental Public Health Tracking Portal <https://tracking.publichealth.maine.gov> . This website provides data on screening rates, lead poisonings, and risk factors for lead poisoning. It allows researchers and providers to get a snapshot on screening rates and lead poisonings in their geographic area.

- MCLPPP also develops materials for providers. Examples include the Reference Sheet for Healthcare Providers (Figure 8) and a Recommended Lead Screening Schedule and Clinical Management Recommendations. These materials are also available on the website under the providers section and have been downloaded 122 and 162 times, respectively over the last 8 months.



**Figure 8: Reference sheet for Healthcare Providers**

Finally, a new public health educator has been hired through the Lead Poisoning Prevention Fund, a 25¢ fee on paint sold in the state. With these resources, we plan to develop a formal outreach program for healthcare professionals that will include formative research, materials review and either redevelopment or redesign, implementation and evaluation.

## D. Collaboration with MaineCare

MCLPPP is collaborating with MaineCare at several levels to increase screening rates. As stated above, all children on MaineCare should be tested at ages 1 and 2. There are ongoing collaborations with MaineCare to share data to identify screening rates (Figure 3) and promote screening in the MaineCare population. Activities for promoting screening include identifying target populations (e.g., who is not getting screened) and providing materials for use to MaineCare for distribution.

## E. Targeted Outreach to Areas with Higher EBLL Rates

While the data in the state does not support universal screening, there are clearly areas within the state where targeted efforts to promote screening are warranted. The Environmental

Occupational Health Programs (EOHPs)<sup>3</sup> have recently completed a major 2-year effort to compile, clean, and geocode childhood blood lead surveillance data for the years 2003 through 2007. These data have been analyzed and mapped to identify areas of the state that have “high-counts” of cases of newly identified children with an elevated blood lead level. Counts of children with elevated blood lead level (i.e., a confirmed blood lead level equal to or above 10 micrograms lead per deciliter blood, or 10 ug/dL) for the years 2003 - 2007 have been mapped to the town level (see Figure 9). This mapping exercise has identified five (5) areas of the state that collectively represent forty (40%) of all identified cases of children with an elevated blood lead level (eBLL). These five areas are: Sanford, Biddeford-Saco, Portland/S.Portland<sup>4</sup> /Westbrook, Lewiston/Auburn, and Bangor. It is noteworthy that within these five areas, 80% or more of the cases of children with an eBLL were living in rental housing.

Higher counts are to be expected for towns with high populations. To determine whether the five communities represent areas of “high risk” of children with eBLLs, we have computed the percent of children with an eBLL relative to the total number of children screened for blood lead in that area. Using this “rate” measure, we can compare rates for these five areas with high counts to the statewide rate to see if areas represent a higher risk (see Table 1).

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<sup>3</sup> The Environmental and Occupational Health Programs is a collection of four programs within the Maine Center for Disease Control and Prevention (ME-CDC) Division of Environmental Health. These four programs are the Maine Childhood Lead Poisoning Prevention Program, the Environmental Public Health Tracking Program, the Occupational Disease Reporting System Program, and the Environmental Toxicology Program. These four programs are grouped into a single administrative unit to promote efficient use and sharing of resources in recognition of their overlapping missions.

<sup>4</sup> South Portland was recently added to the Portland/Westbrook high risk area, though surveillance data have yet to be reanalyzed to include data for this population.

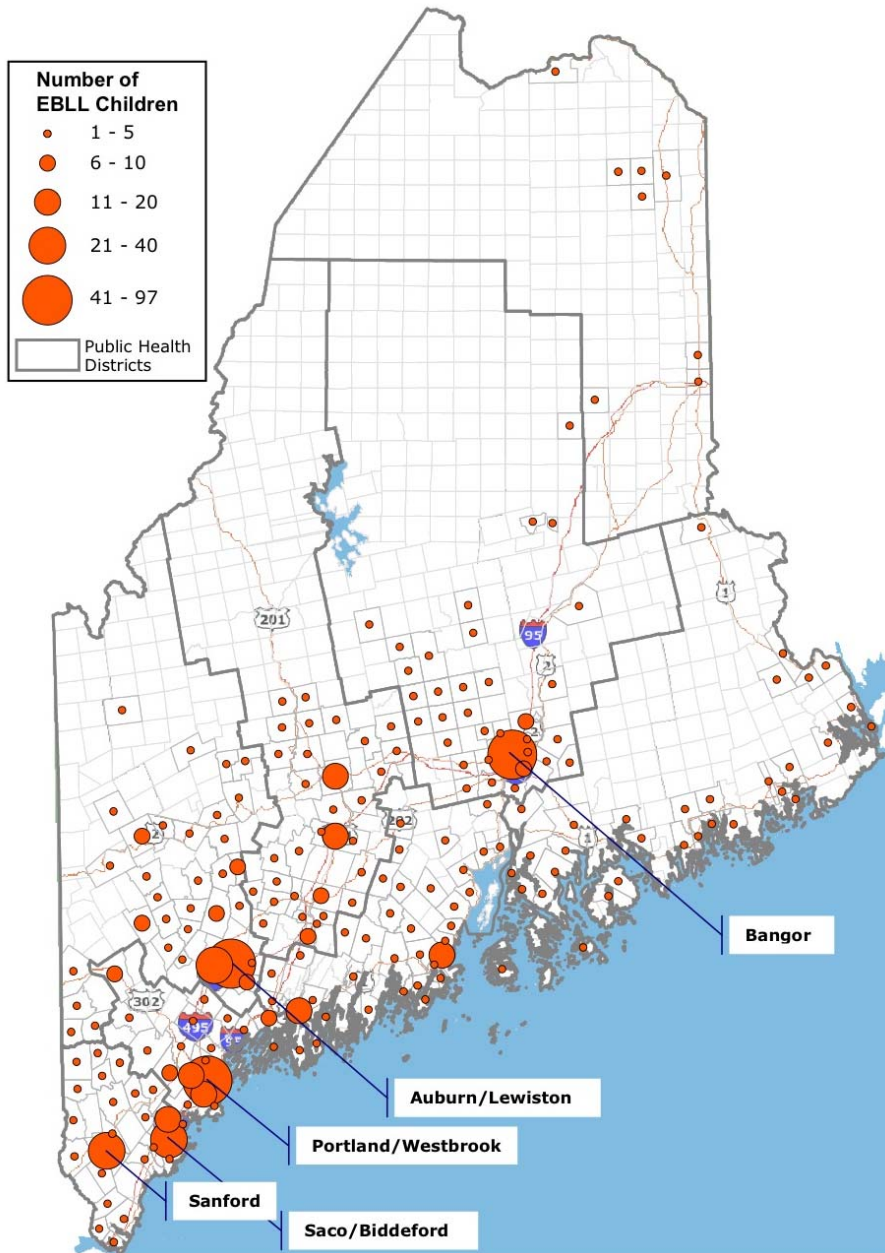


Figure 9 Number of EBLs by town from 2003-2007



**Table 1. Percent of newly identified children under 6 years of age with an elevated blood lead level for identified “high-risk” communities.**

<b>Selected Area</b>	<b>Number Screened</b>	<b>Number EBLL</b>	<b>Percent</b>	<b>95% CI</b>
<b>Bangor</b>	<b>2,096</b>	<b>41</b>	<b>2.0</b>	<b>(1.4 – 2.6)</b>
<b>Biddeford/Saco</b>	<b>2,229</b>	<b>44</b>	<b>2.0</b>	<b>(1.4 – 2.6)</b>
<b>Lewiston/Auburn</b>	<b>4,162</b>	<b>119</b>	<b>2.9</b>	<b>(2.4 – 3.4)</b>
<b>Portland/Westbrook</b>	<b>5,146</b>	<b>110</b>	<b>2.1</b>	<b>(1.7 – 2.5)</b>
<b>Sanford</b>	<b>1,660</b>	<b>34</b>	<b>2.0</b>	<b>(1.3 – 2.7)</b>
<b>Statewide*</b>	<b>69,715</b>	<b>913</b>	<b>1.3</b>	<b>(1.2 – 1.4)</b>

\* excluding the high-risk areas

All five of the identified areas with the highest counts of children with an eBLL, also have a higher percentage of children with an eBLL among their screened population, when compared to the statewide average. Thus, these five communities have been designated as “high-risk” or more appropriately, “high-density” areas for having newly identified children with an eBLL.

Table 2 presents the percent of children born in the calendar years 2003 to 2005 and had at least one blood lead test by 24 months of age for each of the five high density areas.<sup>5</sup> Table 3 presents the percent of children born in calendar years 2003-2005 and had at least on blood lead test by 36 months of age.

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<sup>5</sup> This birth year measure requires surveillance data for the birth year and subsequent years over which the child could have been tested. Thus, to compute the percent of children born in 2004 who had at least one test by 24 months of age requires the use of surveillance data on blood lead testing for the years 2004 through 2006. Surveillance data for the years 2004 through 2007 would be required to compute the corresponding measure for at least one test by 36 months of age.

**Table 2. Percent of children age 0 to 24 months tested at least once for blood lead levels for the five identified high-density areas for children with elevated blood lead levels.**

<b>Selected Area</b>	<b>2003 Avg (95% CI)</b>	<b>2004 Avg (95% CI)</b>	<b>2005 Avg (95% CI)</b>
<b>Bangor</b>	<b>64.4% (59.6-69.2)</b>	<b>56.1% (51.0-61.2)</b>	<b>57.1% (52.3-61.9)</b>
<b>Biddeford/Saco</b>	<b>59.7% (55.2-64.2)</b>	<b>58.1% (53.8-62.4)</b>	<b>49.9% (45.5-54.3)</b>
<b>Lewiston/Auburn</b>	<b>59.3% (55.9-62.7)</b>	<b>59.4% (55.9-62.9)</b>	<b>58.9% (55.5-62.3)</b>
<b>Portland/Westbrook</b>	<b>57.3% (54.3-60.3)</b>	<b>56.9% (53.8-60.0)</b>	<b>55.2% (52.1-58.3)</b>
<b>Sanford</b>	<b>78.8% (73.6-84.0)</b>	<b>72.3% (67.1-77.5)</b>	<b>63.5% (57.9-69.1)</b>
<b>Statewide*</b>	<b>59.9% (59.0-60.8)</b>	<b>58.7% (57.8-59.6)</b>	<b>58.4% (57.5-59.3)</b>

\* excluding the high-risk areas

**Table 3. Percent of children age 0 to 36 months tested at least once for blood lead levels for the five identified high-density areas for children with elevated blood lead levels.**

<b>Selected Area</b>	<b>2003 Avg (95% CI)</b>	<b>2004 Avg (95% CI)</b>	<b>2005 Avg (95% CI)</b>
<b>Bangor</b>	<b>70.2% (65.6-74.8)</b>	<b>67.0% (62.1-71.9)</b>	<b>68.3% (63.8-72.8)</b>
<b>Biddeford/Saco</b>	<b>64.2% (59.8-68.6)</b>	<b>63.9% (59.7-68.1)</b>	<b>56.2% (51.8-60.6)</b>
<b>Lewiston/Auburn</b>	<b>70.6% (67.5-73.7)</b>	<b>69.9% (66.6-73.2)</b>	<b>68.7% (65.5-71.9)</b>
<b>Portland/Westbrook</b>	<b>64.8% (61.9-67.7)</b>	<b>64.9% (61.9-67.9)</b>	<b>62.3% (59.2-65.4)</b>
<b>Sanford</b>	<b>84.7% (80.1-89.3)</b>	<b>77.9% (73.1-82.7)</b>	<b>70.9% (65.6-76.2)</b>
<b>Statewide*</b>	<b>66.5% (65.6-67.4)</b>	<b>64.9% (64.0-65.8)</b>	<b>65.8% (64.9-66.7)</b>

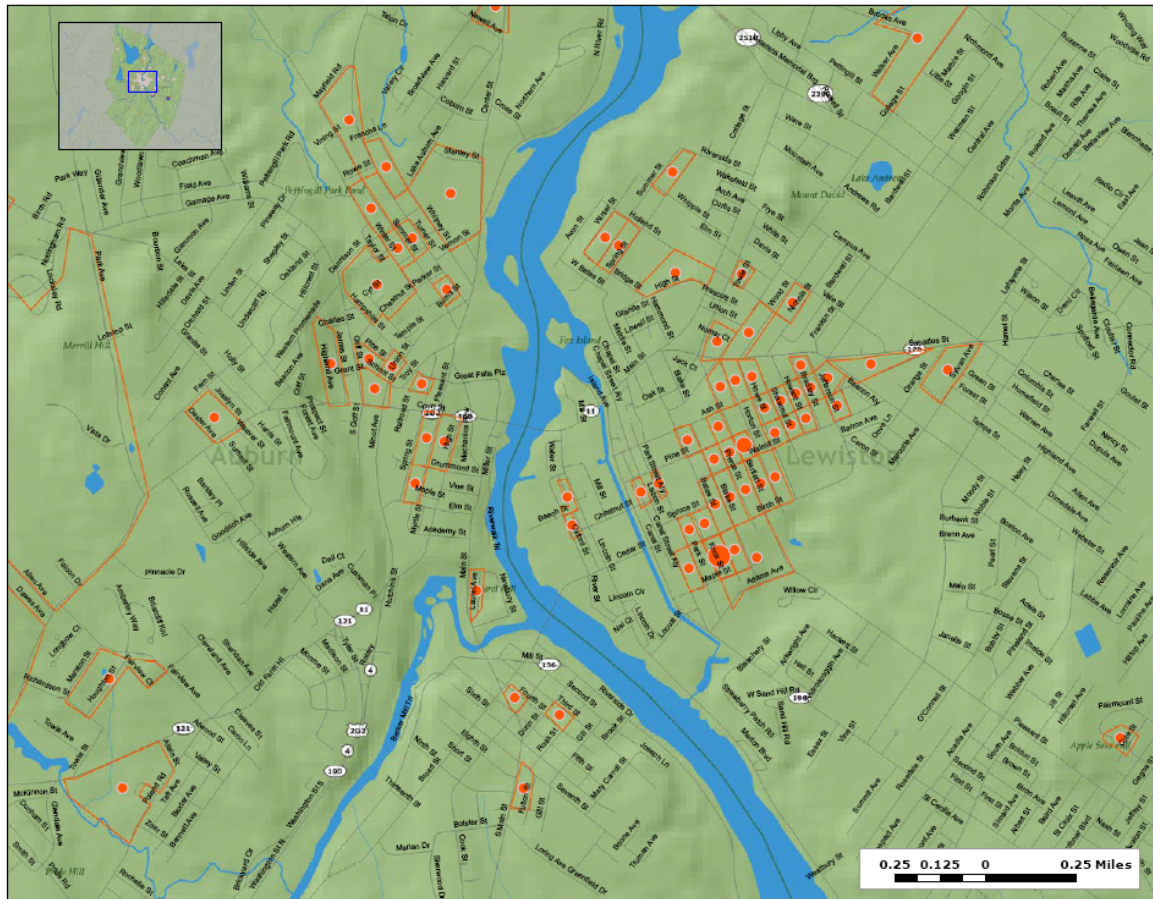
\* excluding the high-risk areas

Taken together, these measures provide a means for tracking improvements in screening rates for these high-risk areas in future years. They suggest a stable or slight decrease in screening rates over that time period. That said, these cohorts predate the outreach activities funded by the Lead Poisoning Prevention Fund and hence, serve at this point, as a baseline measure of screening rates.

Funds from the Lead Poisoning Prevention Fund are used to provide contracts to community coalitions in the five high-risk areas to promote identification of lead hazards, as well as landlord and tenant education and outreach. Approximately \$31,000 is being allocated to each high-risk area. Many of the activities either directly or indirectly promote blood lead screening. Examples include outreach through community partners in these regions (local access TV, community organizations such as Catholic Charities and United Somali Women of Maine, as well as local providers including pediatricians, WIC, HeadStart, etc.).

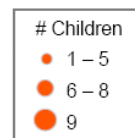
Finally, the data also allow us to target resources within a high density area. For example, figure 10, a map of the EBLLs within the towns of Lewiston and Auburn, shows clusters of lead poisonings in particular neighborhoods. Often these neighborhoods are serviced by a particular health care provider or a limited number of health care providers – to whom we can provide targeted outreach to increase screening rates in those locations. This particular geographic area has a high number of refugees and secondary migrants. MCLPPP has had several ongoing outreach projects to this community.

Number of children with an elevated blood lead test, among those screened, age 0-71 months, by Census Block in Auburn and Lewiston, Maine 2003-2007



**About this map**

This map shows where children have been found with elevated blood lead levels (eBLLs). Orange dots are placed in the center of each Census Block where the children lived. The borders of the Census Block are outlined in orange. The size of the dot indicates the number of children in the Census Block found to have eBLLs. In order to protect privacy as per the Maine CDC Privacy Policy and State Law, if less than 6 children had an eBLL, the number of children is reported as a range (1 to 5), rather than a specific number.



**Source of these data**

The Maine Childhood Lead Poisoning Prevention Program provided these data. The Maine Office of Geographic Information Systems provided the base map. The figure was prepared by the Maine Environmental Public Health Tracking Program.



**Figure 9 Lewiston/Auburn EBLs 2003-2007**

## **F. Evaluating and Revising the Risk Assessment Questionnaire**

Finally, based on new data it appears to be time to revisit the risk assessment questionnaire. Recent data and experience suggests there are several categories of high risk children that are not adequately captured in this screening tool. For example, children with developmental disabilities or autism who are very oral have repeatedly seen as EBLL cases recently, or adding hobby exposure to the question about job exposure. Ideally, the revision of the questionnaire will be tied into a larger outreach plan to providers. This should include an evaluation of how the questionnaire is currently being used, how it can be improved to be more useful to providers (such as tying it into ImmPact2), and reevaluating any changes made. This effort is likely to begin in 2010 and will involve formative research with medical care providers.

## **4. Monitoring, evaluating and revising the statewide screening plan**

The MCLPPP will continue to collect all Maine blood lead screening and testing data for young children. Analysis of the data occurs on at least an annual basis to determine screening and prevalence rates, along with geographic and demographic distributions. Data analysis results will be used to periodically review the statewide screening plan and the screening provisions in Maine law. Changes in the distribution or prevalence of childhood lead poisoning in Maine may necessitate changes in state policies.

The State of Maine remains committed to eliminating childhood lead poisoning. As we work with our partners to develop strategies that are designed to prevent lead poisoning before it occurs, we will continue to be vigilant in our lead screening efforts and targeting these efforts to those most at risk for lead poisoning.