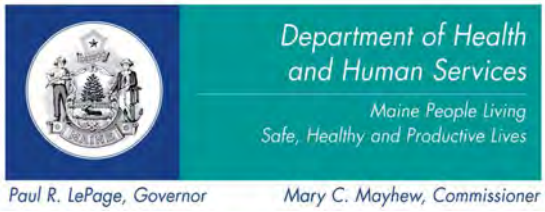
MAINE STATE LEGISLATURE



Report

Progress in Achieving Universal Blood Lead Screening in Designated High-risk Areas of Childhood Lead Poisoning

Prepared in Response to the Maine State Legislature
Resolve 2007 Chapter 186

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Introduction

The 123rd Maine Legislature enacted Public Law Chapter 186, a Resolve "To Achieve Universal Blood Lead Level Screening in Maine Children."[1] It directed the Department of Health and Human Services, Maine Center for Disease Control and Prevention (Maine CDC) to report annually to the Joint Standing Committee on Health and Human Services on the following:

1) Identification of areas of the State at high risk for having children with elevated blood lead levels;
2) Progress made in achieving universal blood lead screening in designated high-risk areas for children 12 to 24 months of age and children 25 to 72 months of age who have not previously been tested for blood lead levels or who have had a change in risk of exposure; and
3) Lessons learned in attempting to achieve universal blood lead screening and any recommendations for screening.

This document presents the sixth report to the Maine Legislature and includes updates on identifying high-risk areas for childhood lead poisoning, changes to Maine's definition of lead poisoning in children, progress in screening for blood lead in high-risk areas, as well as lessons learned and recommendations for screening.

Identification of High-risk Areas for Having Children with Elevated Blood Lead Levels

In 2008, Maine CDC identified the communities of Lewiston-Auburn, Biddeford-Saco, Portland-Westbrook, Bangor and Sanford as high-risk areas for having children with elevated blood lead levels. These communities were identified by comparing the percentage of young children screened for blood lead who had *confirmed*[2] blood lead levels of 10 micrograms lead per deciliter blood or higher (≥ 10 µg/dL) to the percentage for the remainder of the State (i.e., statewide, excluding the high-risk areas), over the years 2003-2007. Most of these high-risk areas had percentages of screened children with confirmed blood lead levels ≥ 10 µg/dL that were two- to three-fold higher than the rest of the State.

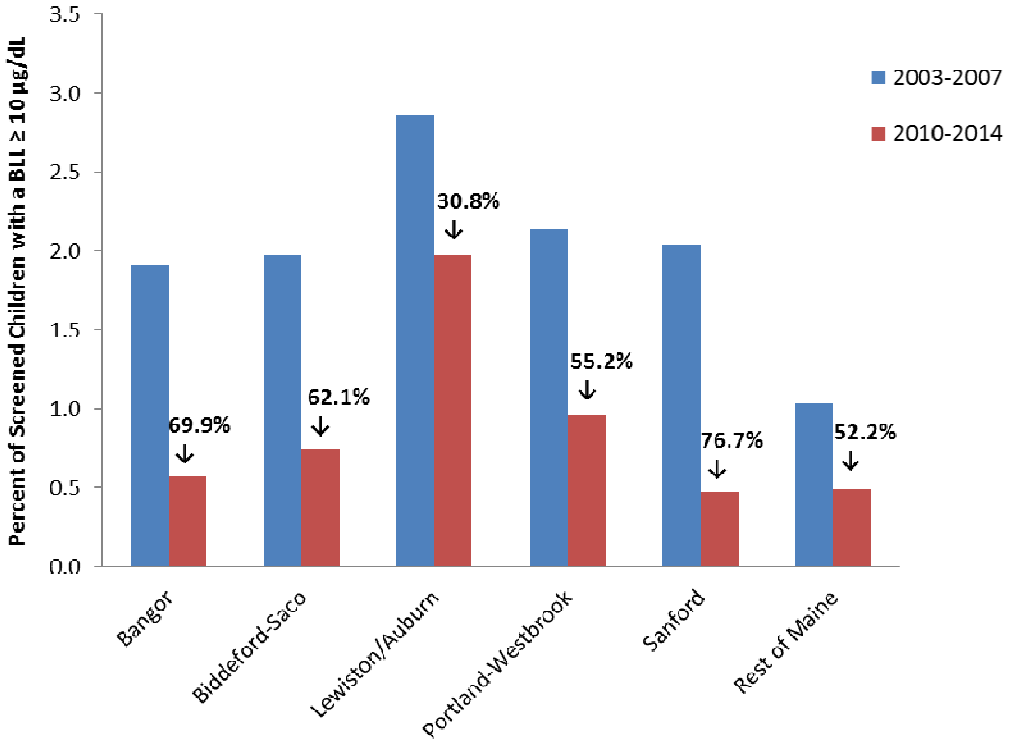
Maine CDC has periodically updated its analysis of these high-risk areas, documenting declines in the percentage of screened children with confirmed blood lead levels ≥ 10 µg/dL for all high-risk communities. The most recent analysis of blood lead screening data covers the five-year period 2010-2014. In this latest analysis, neither Bangor, Biddeford-Saco nor Sanford had

[1] http://www.mainelegislature.org/ros/LOM/LOM123rd/123S1/RESOLVE186.asp

[2] The majority of blood lead screening tests are based on a capillary blood specimen obtained by a finger stick. Due to the potential for contamination from lead on the finger surface, Maine CDC recommends that all elevated capillary test results be confirmed with a specimen obtained by a direct venous draw.

percentages of screened children with confirmed blood lead levels of ≥ 10 µg/dL that were statistically different from percentages for the rest of the State (Figure 1).

Figure 1. Comparison of the percentages of screened children less than six years of age with a confirmed blood lead level equal to or above 10 µg/dL for the five-year time periods of 2003-2007 and 2010-2014 in high-risk areas. Rest of Maine refers to all of Maine, excluding children living in the high-risk areas. The percentage changes in the most recent five-year period relative to the baseline years of 2003-2007 are shown. The 2010-2014 percentages for Bangor, Biddeford-Saco and Sanford are not statistically different from the rest of Maine.



Changes to Maine's Definition of Lead Poisoning in Children

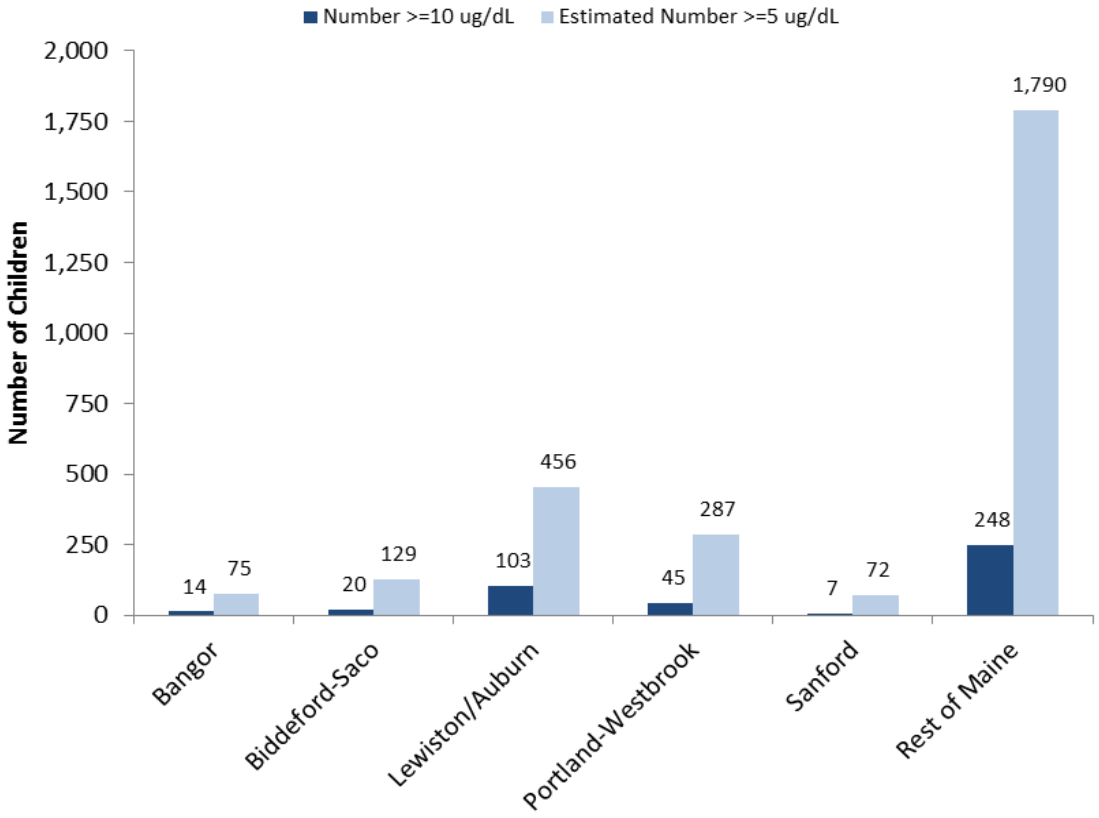
The 127th Maine Legislature amended the Lead Poisoning Control Act to change the definition of childhood lead poisoning for the State of Maine.[3] This new definition establishes the U.S. Centers for Disease Control and Prevention's blood lead reference level as Maine's

[3] Maine's new statutory definition of lead poisoning is: ""Lead poisoning" means a confirmed elevated level of blood lead that is injurious, as defined in rules adopted by the department using reference levels no higher than the 97.5th percentile of blood lead levels in children established by a national health and nutrition examination survey adopted by the federal Department of Health and Human Services, Centers for Disease Control and Prevention." (22 MRS §1315.5-C)

blood lead threshold for carrying out the statutory mandates of the Lead Poisoning Control Act. Currently, the U.S. CDC's blood lead reference level is 5 µg/dL.[4]

The Maine CDC is in the process of finalizing appropriate methods for analyzing blood lead data using this new blood lead threshold. In March 2015, Maine CDC issued new blood lead screening guidelines to healthcare providers, recommending that all blood lead screening test results equal to or greater than 5 µg/dL be confirmed with a venous specimen. Until medical practices more fully implement the new blood lead screening guidelines and confirm screening tests, Maine CDC does not have sufficient data to directly measure the percentage of screened children with a *confirmed* blood lead level of ≥ 5 µg/dL. However, Maine CDC has developed methods to estimate the number of children with a confirmed blood lead level of ≥ 5 µg/dL.[5]

Figure 2. Comparison of the number of newly identified children with a confirmed blood lead level of ≥ 10 µg/dL to the estimated number of children with a blood lead level of ≥ 5 µg/dL, for the years 2010-1014.



[4] In 2012, the federal CDC adopted 5 µg/dL as its blood lead reference level: http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm.

[5] The estimate is computed as the reported number of children with confirmed blood lead levels ≥ 5 µg/dL plus the product of reported unconfirmed ≥ 5 µg/dL and an empirical factor, where the empirical factor was the observed fraction of capillary screening tests with a value of 5 – 9 µg/dL resulting in a venous confirmed value of ≥ 5 µg/dL.

As shown in Figure 2, the new definition of lead poisoning results in a nearly six-fold increase in the number of children identified with an elevated blood lead level. For 2014, the latest year for which data are available, the estimated number of Maine children with a blood lead level ≥ 10 µg/dL was 80; the number with a blood lead level ≥ 5 µg/dL was 469. This increase suggests a need to re-assess the geographical distribution of children with elevated blood lead levels using the new threshold, and potentially redefine high-risk areas. Maine CDC intends to perform such analyses over the coming year and will provide public access to the results on the Maine Tracking Network once available.[6]

Progress Towards Universal Screening in High-risk Areas

Maine CDC tracks screening of children for elevated blood lead in two ways. The first is to track the percentage of 1- and 2-year-old children who are screened during a calendar year. The second is to track the percentage of children born in a particular year who are screened for blood lead at least once before they turn 3 years of age. The calendar-year measure is useful for tracking progress toward the statutory mandates for blood lead screening of children at 1 and 2 years of age.[7] The birth-year measure is more useful for evaluating progress toward universal screening in a population by 3 years of age (i.e., 36 months). For the purposes of the resolve, both the calendar-year measure for screening rates for 1-year-olds (i.e., 12- to 24-month-olds) and the birth-year measure are reported.

With the exception of Lewiston-Auburn, there has been little change in both the percentage of 1-year-old children screened for blood lead, and the percentage of children screened at least once by age 3 years in the high-risk areas (Figures 3a and 3b). Nearly 70% of 1-year-olds living in Lewiston-Auburn were screened for blood lead in 2014; over 85% of children born in this community in 2011 were screened for blood lead by 2014 (i.e., by age 3 years). The Lewiston-Auburn community continues to show strong gains toward universal screening for blood lead.

The communities of Bangor and Biddeford-Saco continue to have percentages of children screened that are well above the rest of the State. Sanford has experienced significant declines in both the percentage of 1-year-olds screened, and the percentage of children screened by age

[6] https://data.mainepublichealth.gov/tracking/home

[7] Current State law requires that children covered by MaineCare be tested for blood lead at 1 and 2 years of age (22 MRSA §1317-D). All other Maine children are required to be screened for blood lead at these same ages unless a risk assessment indicates the absence of lead hazards (22 MRSA §1317-D). These age-specific recommendations are based on the increased risk of lead exposure from crawling and hand-to-mouth behavior. The federal Centers for Medicare & Medicaid Services (CMS) additionally requires that children between the ages of 36 and 72 months also have a screening blood test if a lead toxicity screening has not been previously conducted. CMS requires Head Start programs to make a determination of whether Head Start children have been screened for blood lead and if not, work with parents to ensure the child is screened.

3 years. Screening rates for Portland-Westbrook have remained relatively stable, though percentages are no different than those for rest of the state.

Figure 3a. Comparison of the percentages of 1-year-old children (i.e., children ages 12-23 months) screened for blood lead over the years 2010-2014, for each of the five identified high-risk areas for lead poisoning. Rest of Maine refers to all of Maine, excluding children living in the high-risk areas.

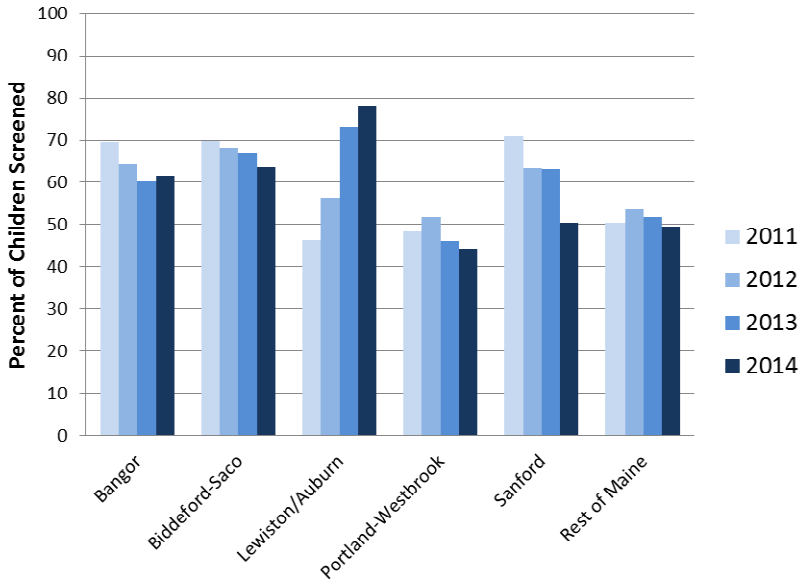
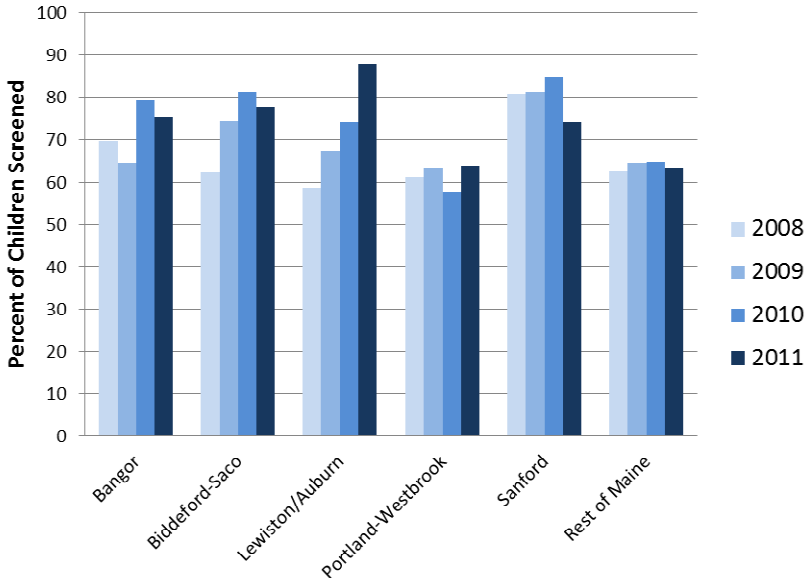


Figure 3b. Comparison of the percentages of children born in a particular year (birth year) and screened for blood lead before 36 months of age, for each of the five identified high-risk areas for lead poisoning. Birth years were 2008 to 2011. Rest of Maine refers to all of Maine, excluding children living in the high-risk areas.



Lessons Learned

The continued progress toward universal blood lead screening for Lewiston-Auburn is believed due in large part to a robust effort to increase screening by a single pediatric practice, and facilitated by that practice's use of in-office testing of blood lead. Under Public Law 2011 Chapter 183, the Lead Poisoning Control Act was amended to allow health care providers to perform real-time blood lead testing in their offices. In-office testing addresses a known barrier to blood lead screening – the need for some patients to travel to an off-site location to have a blood specimen drawn and submitted for analysis.

Since November 2012, seven medical practices have requested and been granted approval for in-office testing, including ones serving the Lewiston-Auburn and Bangor high-risk areas. Several have been approved in 2015 and it will be a year or more before their impact on screening rates can be assessed. Statewide, in-office testing now accounts for more than 17% of annual blood lead screenings. However, the absence of in-office testing in Biddeford-Saco and Sanford show that higher screening rates can be achieved without in-office testing.

Table 1. Numbers of children screened through in-office blood lead testing by locations of practices approved by Maine CDC for in-office testing.

Location	Number of Practices Approved for In-Office Testing	Number of Children Screened through In-Office Testing in 2015
Lewiston	**2**	**1,233**
Waterville/Skowhegan	**1**	**754**
Bangor*	**1**	**363**
Rockport	**1**	**164**
Brunswick*	**1**	**0**
Farmington*	**1**	**0**

*Practices were approved for in-office testing in 2015.

Recommendations

At this time, Maine CDC has no new legislative recommendations for attaining universal blood lead screening of children living in high-risk areas. With the exception of Portland-Westbrook, screening rates for all other identified high-risk areas exceed 70% and are well above rates for the rest of the State, with rates approaching 90% in Lewiston-Auburn. The lack of change in screening rates in Portland-Westbrook and the notable drop in screening rates for Sanford indicate the need for Maine CDC to more actively promote blood lead testing with health care providers serving these communities.