Council of State and Territorial Epidemiologists (CSTE)

Universal Lead Testing in Maryland: How Did We get here?

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MARYLAND Department of Health

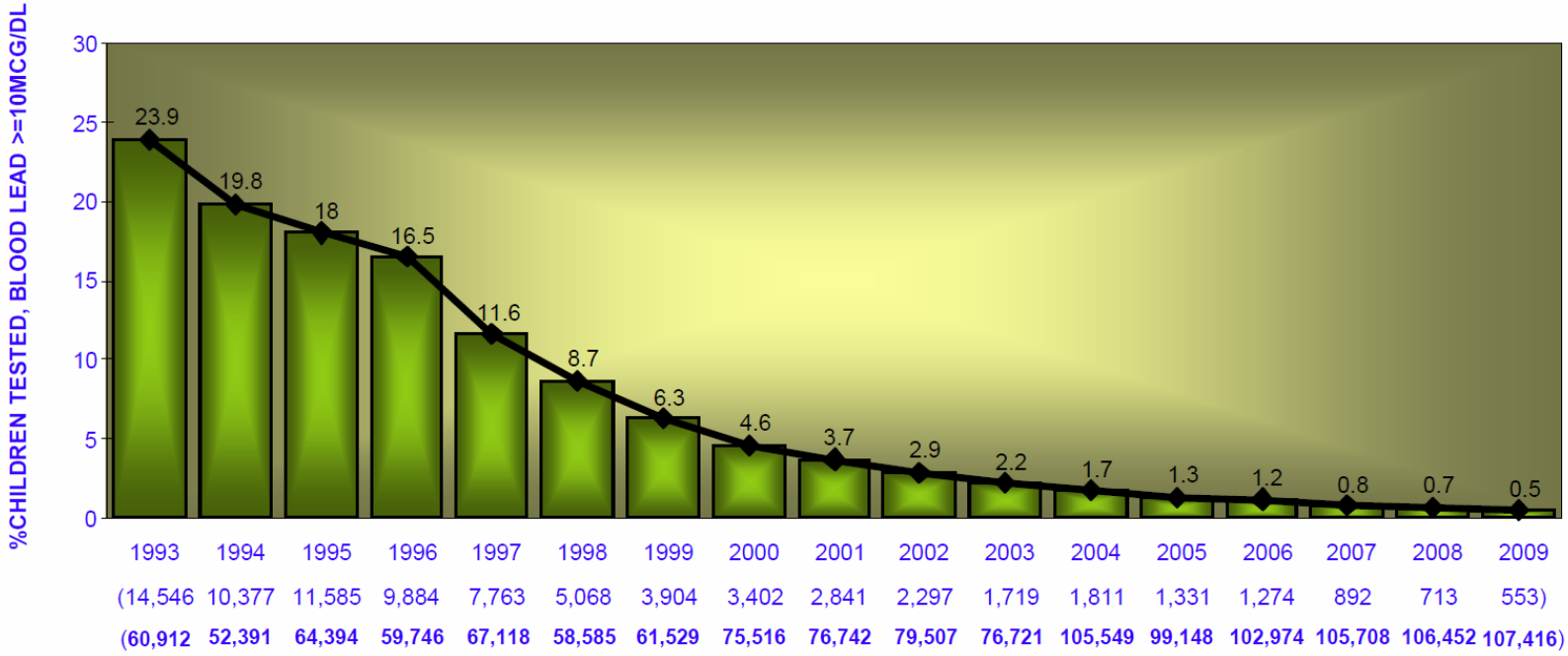
Questions

- How did Maryland decide that it would move from targeted testing to universal testing?
- What factors, including epidemiology and data, played a role in the decision process?
- Implementation and outreach strategies
- Evaluation

Background

- Maryland and Lead
  - History
  - Legal/regulatory
  - Testing requirements

MARYLAND DEPARTMENT OF THE ENVIRONMENT
CHILDHOOD BLOOD LEAD SURVEILLANCE
STATEWIDE 1993-2009



CALENDAR YEAR
(Number of Children with BLL>=10mcg/dl)
(Number of Children Tested)

MDE

MARYLAND health

At Risk Areas by Zip Code – Revised 2004 *

Allegany	Baltimore Co. (Cont.)	Frederick . (Cont)	Montgomery (Cont)	Queen Anne's
ALL	21239	**21757**	**20812**	21607
	21244	21758	**20815**	**21617**
Anne Arundel	21250	21762	**20816**	**21620**
20711	21251	**21769**	**20818**	**21623**
20714	21282	**21776**	**20838**	**21628**
20764	**21286**	**21778**	**20842**	21640
20779	**Baltimore City**	**21780**	**20868**	21644
21060	ALL	21783	**20877**	**21649**
21061		21787	**20901**	**21651**
21225	**Calvert**	**21791**	**20910**	**21657**
21226	**20615**	**21798**	20912	21668
21402	**20714**		20913	21670
		Garrett		
Baltimore Co.	**Caroline**	**ALL**		**Somerset**
21027	**ALL**		**Prince George's**	**ALL**
21052		**Harford**	20703	
21071	**Carroll**	21001	20710	**St. Mary's**
21082	**21155**	21010	20712	**20606**
21085	**21757**	21034	20722	**20626**
21093	**21776**	21040	20731	**20628**
21111	21787	21078	20737	**20674**
21133	**21791**	**21082**	20738	**20687**
21155		21085	20740	
21161	**Cecil**	21130	20741	
21204	**21913**	**21111**	20742	**Talbot**
21206		**21160**	20743	**21612**
21207	**Charles**	**21161**	20746	**21654**
21208	20640		**20748**	**21657**
21209	**20658**	**Howard**	20752	**21665**
21210	**20662**	**20763**	20770	**21671**
21212			20781	**21673**
21215	**Dorchester**	**Kent**	20782	**21676**
21219	**ALL**	**21610**	20783	
21220		**21620**	**20784**	
21221	**Frederick**	**21645**	20785	
21222	**20842**	**21650**	20787	**Washington**
21224	21701	**21651**	20788	**ALL**
21227	**21703**	21661	20790	
21228	**21704**	**21667**	20791	**Wicomico**
21229	21716		20792	ALL
21234	**21718**	**Montgomery**	20799	
21236	**21719**	**20783**	20912	**Worcester**
21237	21727	**20787**	20913	**ALL**

Maryland Department of Health and Mental Hygiene Blood Lead Testing Certificate http://www.fha.state.md.us/och/html/lead.html

*** ZipCodes noted in bold print added in 2004 Targeting Plan Revision.**

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Analysis

- 2012 CDC Decision on ACLPP
- 2012 – 2013: CDC/CSTE Environmental Epidemiology Fellow
  - Analysis of blood lead testing strategies

Evaluation of Potential Strategies for Targeting Childhood Lead Testing in Maryland

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[1]Environmental Health Bureau, Maryland Department of Health and Mental Hygiene, [2]Lead Surveillance Program, Maryland Department of the Environment

INTRODUCTION

Exposure to lead remains the most significant and widespread environmental hazard for Maryland (MD) children. In 2011, there were 342 new cases of children with blood lead levels (BLL) greater than or equal to 10 µg/dL. Through primary prevention efforts aimed at reducing lead paint in rental housing, and testing of children at 1 and 2 years of age in targeted areas and populations, the state has significantly reduced the population lead level and number of lead poisoned children. However, there has been a gradual decrease in the proportion of cases due to lead paint exposure in rental housing, with an increasing proportion coming from owner-occupied homes, old or imported toys, lead-painted pottery, hobbies, traditional home remedies or cosmetic items and clothing contaminated with lead from the workplace.

The goal of this project is to evaluate and revise the targeting strategy used to identify children in MD who should automatically be tested for lead exposure. The current targeting strategy, developed in 2000 and revised in 2004, is based on zip code of residence, or enrollment in Medicaid's EPSTD program. Currently, the testing rate for children <6 years old is 21.9% in the state overall, with 27.7% of children in targeted areas compared to 20.1% in non-targeted areas tested.

METHODS

SAS Version 9.2 and ArcGIS ArcMap10 were used for all data summary and analysis.

Data Sources:

- MD Childhood Lead Registry, 2005-2009 lead test records
- MD Department of Assessments & Taxation property data
- U.S. Census data & USPS zip codes

Targeting Strategies:

Strategy 1— Base testing on the distribution of 2005-2009 lead tests.

Assumption: If every child in a zip code were tested, the percentage overall with a BLL ≥5µg/dL is the same as the percentage actually tested with a BLL ≥5µg/dL.

Analysis: Proportion of test results ≥5µg/dL by zip code applied to each zip code's population of children <6 years old. Areas were ranked based on the expected number of children with a BLL ≥5µg/dL

Strategy 2—Target testing based on an updated version of the 2000 Maryland Targeting Model.

Assumption: Historical risk factors continue to be the primary influences on a child's risk of lead poisoning in MD.

Analysis: Logistic regression model, with census tract as the unit of analysis and "risk area" as the outcome:

$$logit\ (Risk=1) = \beta_0 + \beta_1 x\ (\%\ Pre\ 1950\ housing) + \beta_2 x\ (Poverty\ Index) + \beta_3 x\ (Median\ Housing\ Value) + \beta_4 x\ (\%\ 1950\text{-}79\ Housing) + \beta_5 x\ (\%\ Children\ Tested\ for\ EBL)$$

"Risk area" is defined as a census tract with ≥5% (upper estimate) or ≥17% (lower estimate) of test results ≥5µg/dL in the results presented here. (Additional "risk area" definitions based on the distribution of BLLs in MD were also assessed in the full report).

Strategy 3—Universal testing for a defined period of time.

Assumption: There is no child for whom lead exposure is impossible. As efforts to eliminate exposure from old housing have succeeded, other routes of exposure have become more common.

Analysis: This strategy requires no modeling or data analysis.

RESULTS

Strategy 1 Results—The expected number of children with a BLL ≥5µg/dL was calculated for each zip code, and the zip codes with the highest number of estimated children were identified.

- Lower Estimates: 50% of children expected to have a BLL ≥5µg/dL reside in the 32 zip codes indicated in Figure 1. An estimated 95,116 children <6 years old live in these zip codes (2010 Census).
- Upper Estimates: 90% of children expected to have a BLL ≥5µg/dL reside in the 173 zip codes indicated in Figure 2. An estimated 374,621 children <6 years old live in these zip codes (2010 Census).

Strategy 2 Results — Data from the MD Childhood Lead Registry and American Community Survey were used to develop logistic regression models predicting the number of children with blood lead levels ≥5µg/dL residing in each census tract based on different "risk area" definitions.

- Lower Estimates: An estimated 106,570 children live in the 358 "at risk" census tracts indicated in Figure 3. For this model, a risk area was defined as a tract with ≥17% of test results ≥5µg/dL.
- Upper Estimates: An estimated 385,885 children live in the 986 "at risk" census tracts indicated in Figure 4. For this model, a risk area was defined as a tract with ≥5% of test results ≥5µg/dL.

Strategy 3 Results—This strategy requires that all children will be tested at one year and two years of age (146,037 children, based on 2010 census data), regardless of place of residence or any other consideration. This strategy would be recommended for a period of three years, enough time to develop a more complete understanding of the actual distribution of blood lead levels throughout the State.

Figure 1. Targeting Strategy 1, Risk Area Capturing 50% of Children Expected to have a BLL ≥5µg/dL

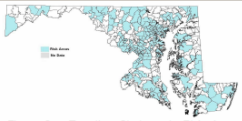

Figure 2. Targeting Strategy 1, Risk Area Capturing 90% of Children Expected to have a BLL ≥5µg/dL

Figure 3. Targeting Strategy 2, Risk Area based on modeled risk areas defined as ≥17% of test results ≥5µg/dL

Figure 4. Targeting Strategy 2, Risk Area based on modeled risk areas defined as ≥5% of test results ≥5µg/dL

DISCUSSION

This represents the first comprehensive review of the Maryland targeting strategy, based on up-to-date testing and demographic data. It explores a range of possible alternatives, allowing the public, policy makers, and public health professionals to choose a strategy based on the most complete understanding of the strengths and limitations of the data.

A strength of the analysis is that it uses the most up to date available data for blood lead testing and demographic characteristics of the State. It also looks at the broadest possible range of alternative strategies, and is explicit about all of the assumptions used in creating the strategies.

A limitation is that two of the alternative strategies are based on historical testing data, which are not representative of the BLLs of all MD children. They are likely more representative in targeted areas, where greater numbers of children are tested. The two alternatives are also highly influenced by population size and 2005-2009 testing rates — areas with large populations are more likely to be classified as "at risk." The data also have limitations in geographic resolution, timeliness and availability.

CONCLUSION

The adoption of a particular strategy depends on a number of factors, including:

- The estimated number of lead exposed children who would be identified, as well as the estimated number of lead exposed children who might be missed based on selective (non-universal) testing strategies;
- Costs of testing and associated follow up;
- Impacts of expanded testing on both public health and on the health care system;
- Potential benefits of identifying children with low-level exposures before they become significantly exposed; and
- Potential limitations of the data and models used to analyze each of the targeting strategy options.

The Department is currently in the process of evaluating the strengths and weaknesses of each of the three options in order to develop its final recommendations.

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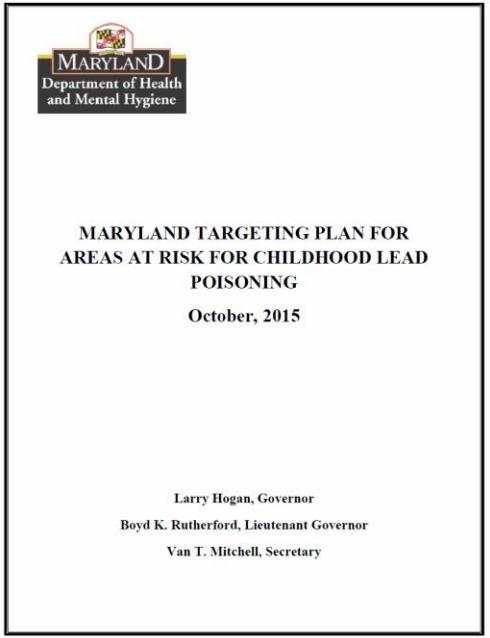
Updating the Targeting Plan and Regulations

- 2013 – Internal/external discussions on development of revised testing strategy
- 2014 – Update to Targeting Plan
  - Extensive stakeholder and public input
- October, 2015 – Release of revised Targeting Plan



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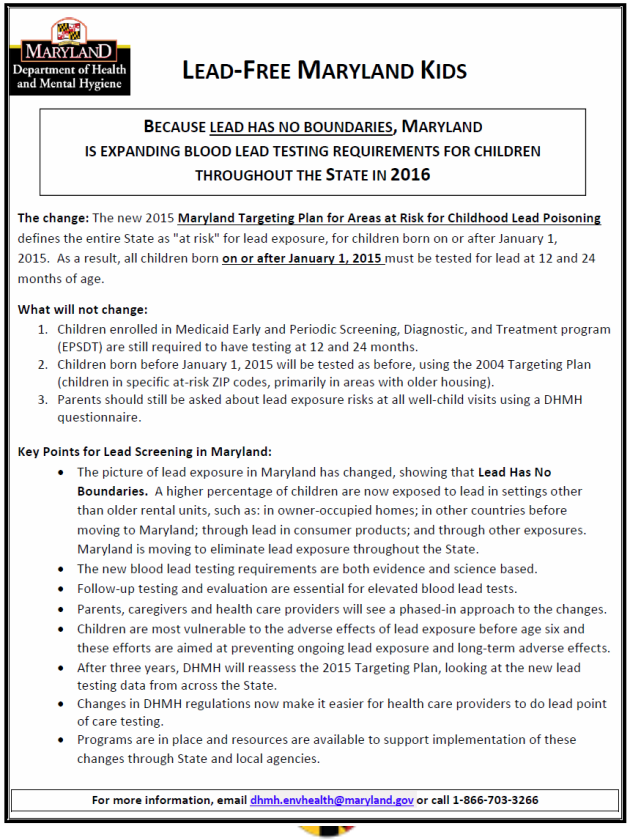
Lead Testing Strategy

- Testing of all children age 12 and 24 months
- Re-evaluation of strategy after 3 years and review of surveillance data
- Clinical guidelines for health care providers

Outreach and Communications

- Kickoff – 2015 Lead Poisoning Prevention Week
- Regulations – COMAR 10.11.04
  - Key decision – “phasing in”
- Clinical Guidelines
  - Mailed to all health care providers



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LEAD-FREE MARYLAND KIDS

BECAUSE LEAD HAS NO BOUNDARIES, MARYLAND IS EXPANDING BLOOD LEAD TESTING REQUIREMENTS FOR CHILDREN THROUGHOUT THE STATE IN 2016

The change: The new 2015 **Maryland Targeting Plan for Areas at Risk for Childhood Lead Poisoning** defines the entire State as "at risk" for lead exposure, for children born on or after January 1, 2015. As a result, all children born **on or after January 1, 2015** must be tested for lead at 12 and 24 months of age.

What will not change:

1. Children enrolled in Medicaid Early and Periodic Screening, Diagnostic, and Treatment program (EPSDT) are still required to have testing at 12 and 24 months.
2. Children born before January 1, 2015 will be tested as before, using the 2004 Targeting Plan (children in specific at-risk ZIP codes, primarily in areas with older housing).
3. Parents should still be asked about lead exposure risks at all well-child visits using a DHMH questionnaire.

Key Points for Lead Screening in Maryland:

- The picture of lead exposure in Maryland has changed, showing that **Lead Has No Boundaries.** A higher percentage of children are now exposed to lead in settings other than older rental units, such as: in owner-occupied homes; in other countries before moving to Maryland; through lead in consumer products; and through other exposures. Maryland is moving to eliminate lead exposure throughout the State.
- The new blood lead testing requirements are both evidence and science based.
- Follow-up testing and evaluation are essential for elevated blood lead tests.
- Parents, caregivers and health care providers will see a phased-in approach to the changes.
- Children are most vulnerable to the adverse effects of lead exposure before age six and these efforts are aimed at preventing ongoing lead exposure and long-term adverse effects.
- After three years, DHMH will reassess the 2015 Targeting Plan, looking at the new lead testing data from across the State.
- Changes in DHMH regulations now make it easier for health care providers to do lead point of care testing.
- Programs are in place and resources are available to support implementation of these changes through State and local agencies.

For more information, email dhmh.envhealth@maryland.gov or call 1-866-703-3266

Lead Poisoning Prevention Week
Lead-Free Maryland Kids

Lead is found in all areas of Maryland, from many different sources.

A blood lead test is the only sure way to know whether your child has been exposed to lead.

All Maryland children born on or after **January 1, 2015** should have a blood lead test at **12** and **24** months of age.

Lead Has No Boundaries

Maryland Department of Health and Mental Hygiene

1-866-703-3266

Dhmh.envhealth@Maryland.gov

Maryland Department of Health and Mental Hygiene

2016 Maryland Guidelines for the Assessment and Management of Childhood Lead Exposure

For Children 6 Months to 72 Months of Age

Maryland Department of the Environment

Test Blood Lead Level according to **Table 1**

↓

Confirm all capillary blood lead levels ≥ 5 mcg/dL with venous sample. Follow ** **Table 2** for schedule.

↓

Guidelines for Actions **Table 3** and **Table 5**

↓

Schedule Follow-up Venous Blood Lead Testing for all ≥ 5 mcg/dL **Table 4**

Table 1: Guidelines for Blood Lead Level Testing In Children 6 Months to 72 Months of Age (COMAR 10.11.04, as of 3/28/2016)

For ALL children born on or after 1/1/15, OR on Medicaid, OR ever lived in a 2004 At-Risk Zip code*									
6 Months	9 Months	12 Months	15 Months	18 Months	24 Months	30 Months	36 Months	48 Months	60 Months
Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen
Test if indicated	Test if indicated	**Test Blood Lead Level**	Test if indicated	Test if indicated	**Test Blood Lead Level**	Test if indicated	Test if indicated	Test if indicated	Test if indicated
For children born before 1/1/15, AND not on Medicaid, AND never lived in a 2004 At-Risk ZIP code*									
6 Months	9 Months	12 Months	15 Months	18 Months	24 Months	30 Months	36 Months	48 Months	60 Months
Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen	Screen
Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated	Test if indicated

Screening	• Perform Lead Risk Assessment Questionnaire (questions found in Lead Risk Assessment Questionnaire section of this document) • Clinical assessment, including health history, developmental screening and physical exam • Evaluate nutrition and consider iron deficiency • Educate parent/guardian about lead hazards
Indications for Testing	• Parental/guardian request • Possible lead exposure or symptoms of lead poisoning, either from health history, development assessment, physical exam or newly positive item on Lead Risk Assessment Questionnaire. *(Questions can be found in the Lead Risk Assessment Questionnaire section of this document)* • Follow-up testing on a previously elevated Blood Lead Level *(Table 4)* • Missed screening: If 12 month test was indicated and no proof of test, then perform as soon as possible after 12 months and then again at 24 months. If 24 month test was indicated and no proof of test, then perform test as soon as possible. • For more information about lead testing of pregnant and breastfeeding women, see: *http://www.cdc.gov/nceh/lead/publications/leadandpregnancy2010.pdf.*

** See back of chart for list of 2004 At-Risk ZIP codes*

Table 2: Schedule for Confirmatory Venous Sample after Initial Capillary Test **

Capillary Screening Test Result	Perform Venous Test Within
< 5 mcg/dL	Not Required
5 – 9 mcg/dL	12 weeks
10 – 44 mcg/dL	4 weeks
45 – 59 mcg/dL	48 hours
60 – 69 mcg/dL	24 hours
70 mcg/dL and above	Immediate Emergency Lab Test

***Requirements for blood lead reporting to the Maryland Childhood Lead Registry are located at COMAR 26.02.01. Reporting is required for all blood lead tests performed on any child 18 years old and younger who resides in Maryland.*

Table 3: Abbreviated Clinical Guidance for Management of Lead in Children Ages 6 Months to 72 Months *(Full Guidelines in Table 5)*

Blood Lead Level	Follow-up testing	Management
< 5 mcg/dL	On schedule **Table 1**	• Continue screening and testing on schedule. • Continue education for prevention. • If new concern identified by clinician, then retest blood lead level.
5-9 mcg/dL	3 months See **Table 4**	All of above AND: Investigate for exposure source in environment and notify health department. • For more detail consult **Table 5**
≥ 10 mcg/dL	See **Table 4**	Consult **Table 5**

Table 4: Schedule for Follow-up Venous Blood Lead Testing after Blood Lead Level ≥ 5 mcg/dL

Venous Blood Lead Level	Early follow-up testing (2-4 tests after identification)	Later follow-up testing after blood lead level declining
5 – 9 mcg/dL	1 – 3 months***	6 – 9 months
10 – 19 mcg/dL	1 – 3 months***	3 – 6 months
20 – 24 mcg/dL	1 – 3 months***	1 – 3 months
25 – 44 mcg/dL	2 weeks – 1 month	1 month
≥ 45 mcg/dL	As Soon As Possible	As Soon As Possible, based on treatment plan

Seasonal variation of Blood Lead Levels exists, greater exposure in the summer months may necessitate more frequent follow-up.

**** Some clinicians may choose to repeat elevated blood lead test within a month to ensure that their BLL level is not rising quickly. (Advisory Committee on Childhood Lead Poisoning Prevention - CDC 2012)*

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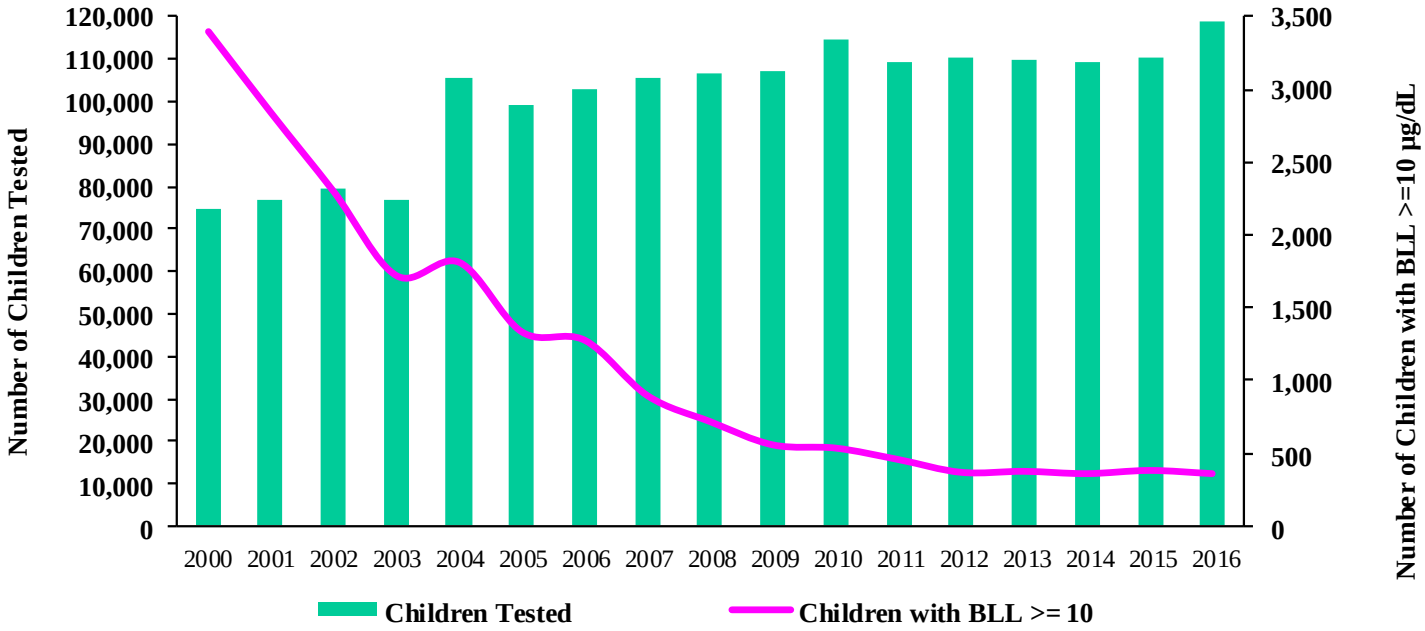
Issues

- Insurance Coverage
- “I thought we’d taken care of lead?”
- Flint, Michigan

Evaluation

- In CY 2016, a total of 118,619 children aged 0-72 months were tested, a 7.1% increase in the number tested at age 0-72 months when compared with the average during CY 2010-2015 (110,706)
- The percent of children aged 12 and 24 months tested in CY 2016 (44.5%) was increased by 12.1% relative to the mean percentage of children tested over CY 2010-2015 (39.7%)

Number of Children Aged 0-72 Months Tested for Lead and Number of Those Children Reported to Have Blood Lead Levels ≥10 µg/dL: CY 2000-2016

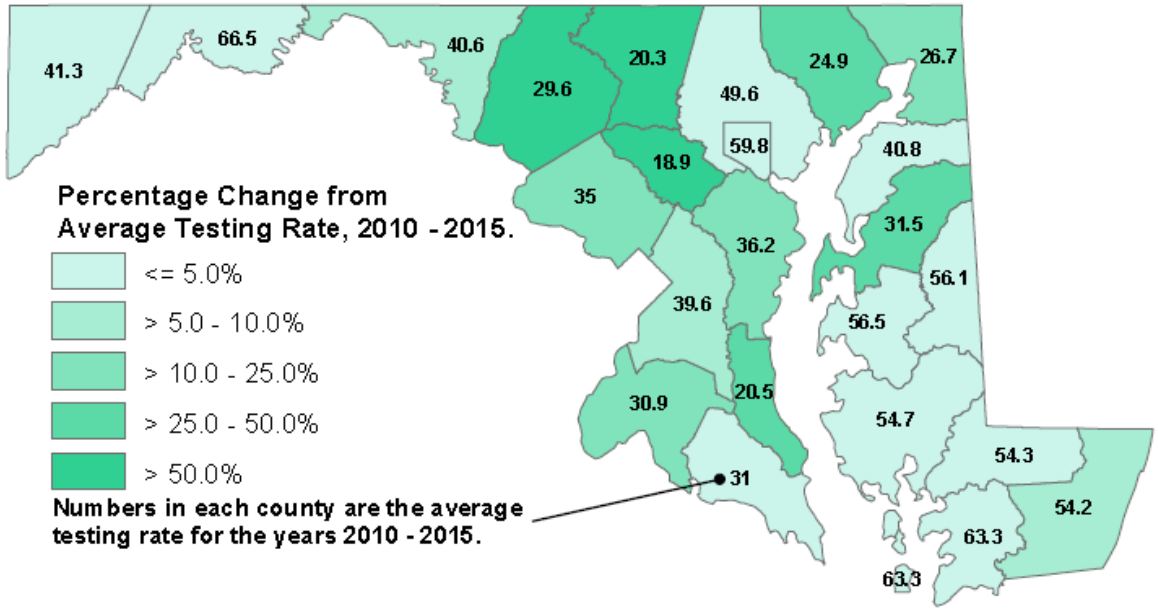


Source: Maryland Childhood Lead Registry 2016 Annual Report

MARYLAND Department of Health

First Year of the Initiative

Change in 2016 Maryland Blood Lead Testing Rates of One and Two Year Old Children by County, Compared with Average Rates of Blood Lead Testing from 2010 - 2015.



Source: Maryland Childhood Lead Registry

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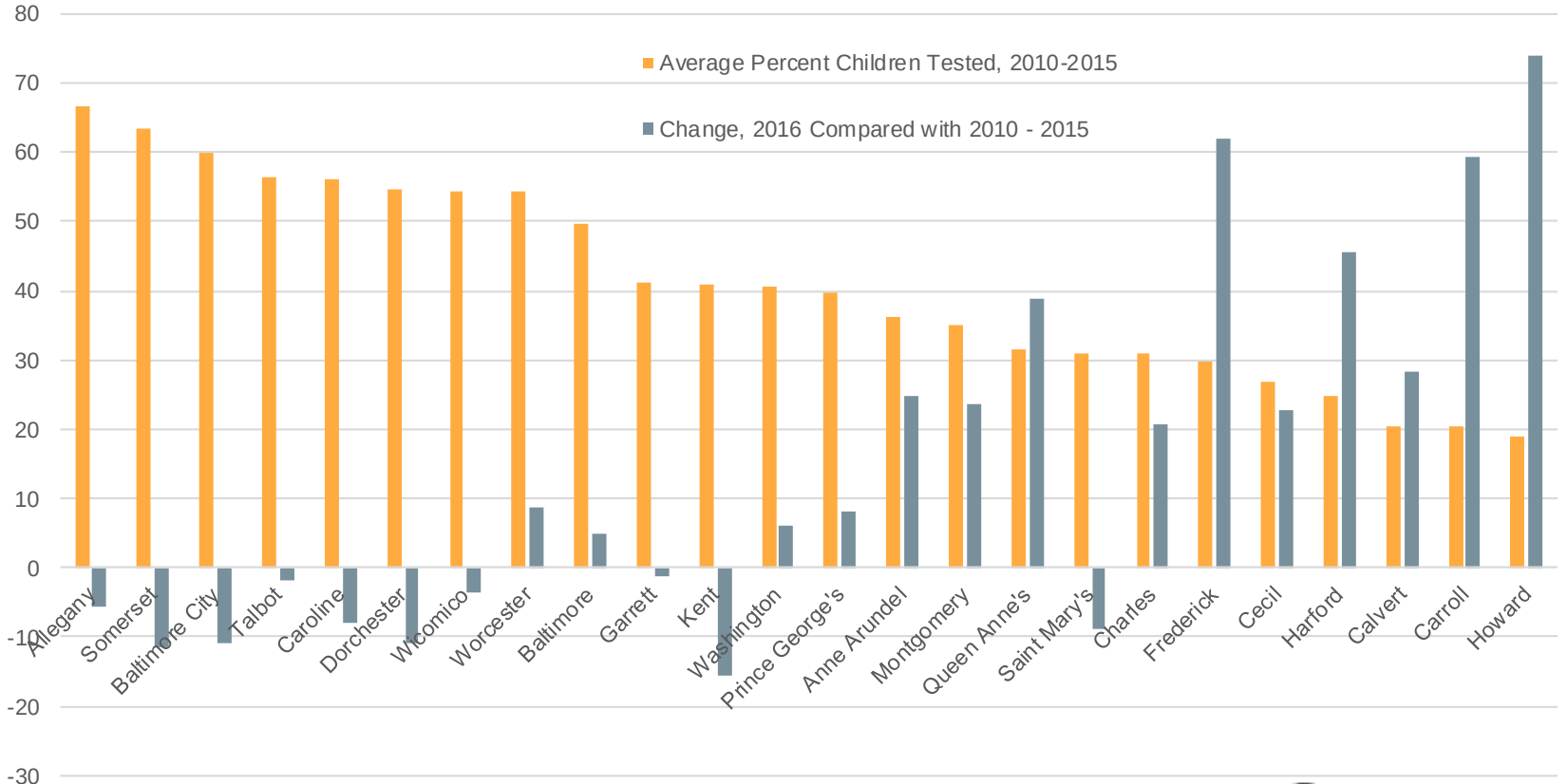
Maryland Lead Testing Initiative 2016



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Department of Health

Lessons Learned

- Data counts
- Change takes time
- Timing is everything
- Partners are critical

Acknowledgments

- Maryland Department of the Environment, Center for Childhood Lead Poisoning Prevention
- Maryland Commission on Lead Poisoning Prevention
- Green and Healthy Homes Initiative
- CDC/CSTE Applied Epidemiology Fellowship Program

Maryland Department of Health

Prevention and Health Promotion Administration

https://phpa.health.maryland.gov

MARYLAND Department of Health

UNIVERSAL BLOOD LEAD TESTING NEW JERSEY'S REQUIREMENTS

DR. SIOBHAN PAPPAS, EPIDEMIOLOGIST

NEW JERSEY DEPARTMENT OF HEALTH

LEGAL REQUIREMENT

- In 1996, NJ statute adopts universal screening for all children with health insurance carriers providing coverage (*N.J.S.A. 26:2-130 to 137*)
- This decision was based on a CDC recommendation that if a state's percentage of pre-1978 housing was above 27% that universal screening should be used
- Universal screening was achieved by statute and regulation
- Health insurance carriers are required to provide coverage for group policies of 50 or more persons
- A co-pay or co-insurance deductible may be required
- Local Health Departments are required to provide testing for uninsured/underinsured households using filter paper or a Leadcare II analyzer

EDUCATION AND ENFORCEMENT

- Initially, NJ disseminated hard copy folders of information
  - Information about the law's requirements
  - Sample risk assessment forms
  - Sample follow-up communication with parents/legal guardians
  - "Lead Lami"
    - Risk reduction
    - Retesting
    - Contacts for medical consultation

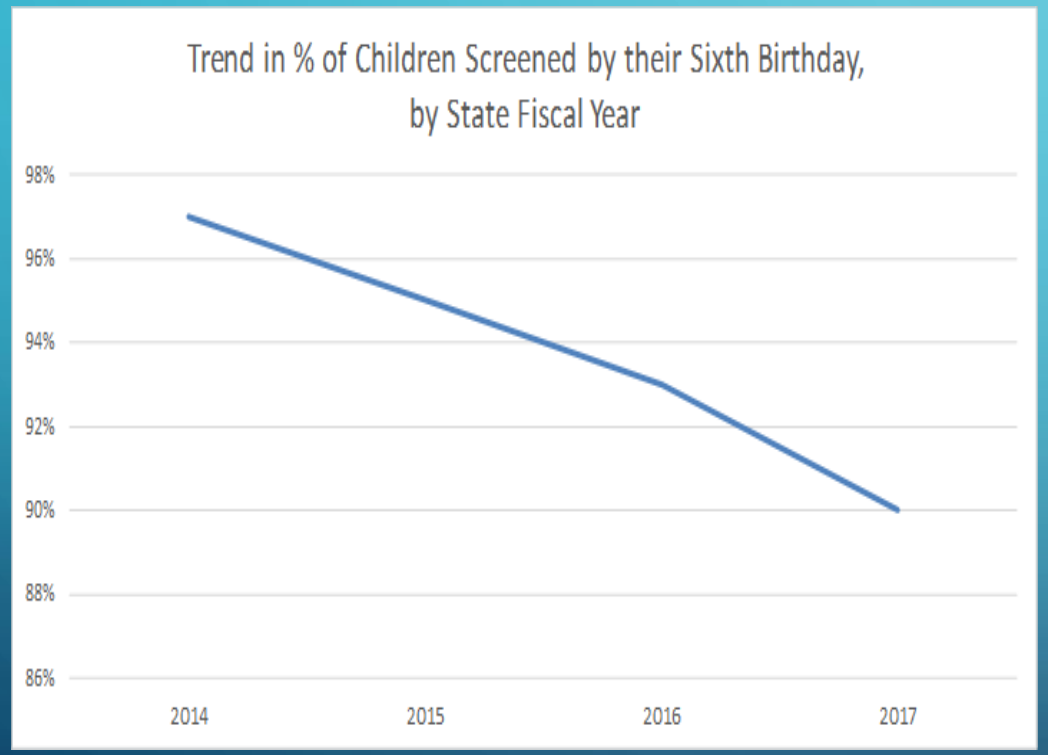
EDUCATION AND ENFORCEMENT (CONTINUED)

- NJ Physicians Lead Advisory Committee (NJPLAC)
  - Developed materials for distribution to health care providers
  - Provided guidance to NJ DOH on outreach and education
  - Partnered with American Academy of Pediatrics, NJ Chapter, in providing continuing medical education opportunities through webinars and conference topics

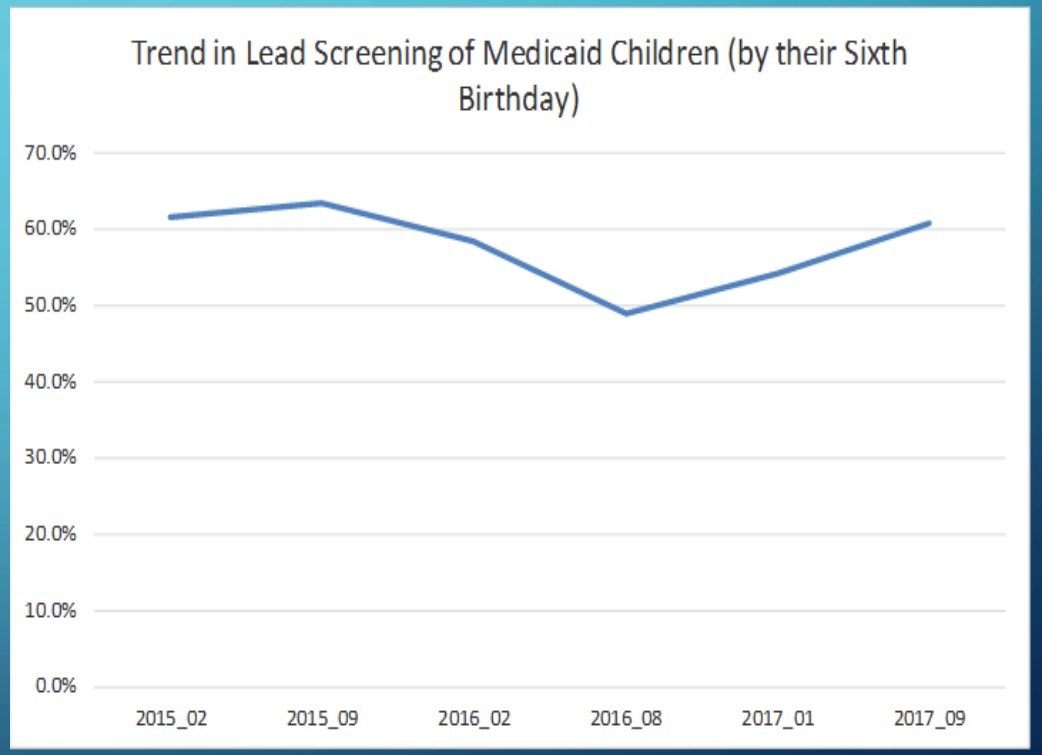
COMPLIANCE WITH UNIVERSAL SCREENING

- Municipal screening rates correlate to areas with high-risk geographic areas and other indicators of risk (low-to-moderate income; population of children 5 years or younger; recent immigration to the United States)
- New deliverables to current grantees includes 10% increase in screening rates in geographic service area

TESTING TRENDS



Testing trends in New Jersey for the percentage of all children screened at least once by their 6th birthday



Testing trends in New Jersey for the percentage of Medicaid children at least once by their 6th birthday

RECOMMENDATIONS FOR STATES THINKING OF CHANGING FROM TARGETED TO UNIVERSAL TESTING

- Must have enforcement ability for health care provider non-compliance
- Must have means to assess screening rates for high-risk geographic areas and populations
- Health care provider outreach should not be limited to pediatricians
- Outreach and education plan should include targeted messages for parents/guardians, schools, and child care centers


RHODE ISLAND
DEPARTMENT OF HEALTH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Advancing public health performance
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Rhode Island Universal Blood Lead Screening Requirements

02/02/2018
CSTE Webinar

Lead Poisoning in Rhode Island

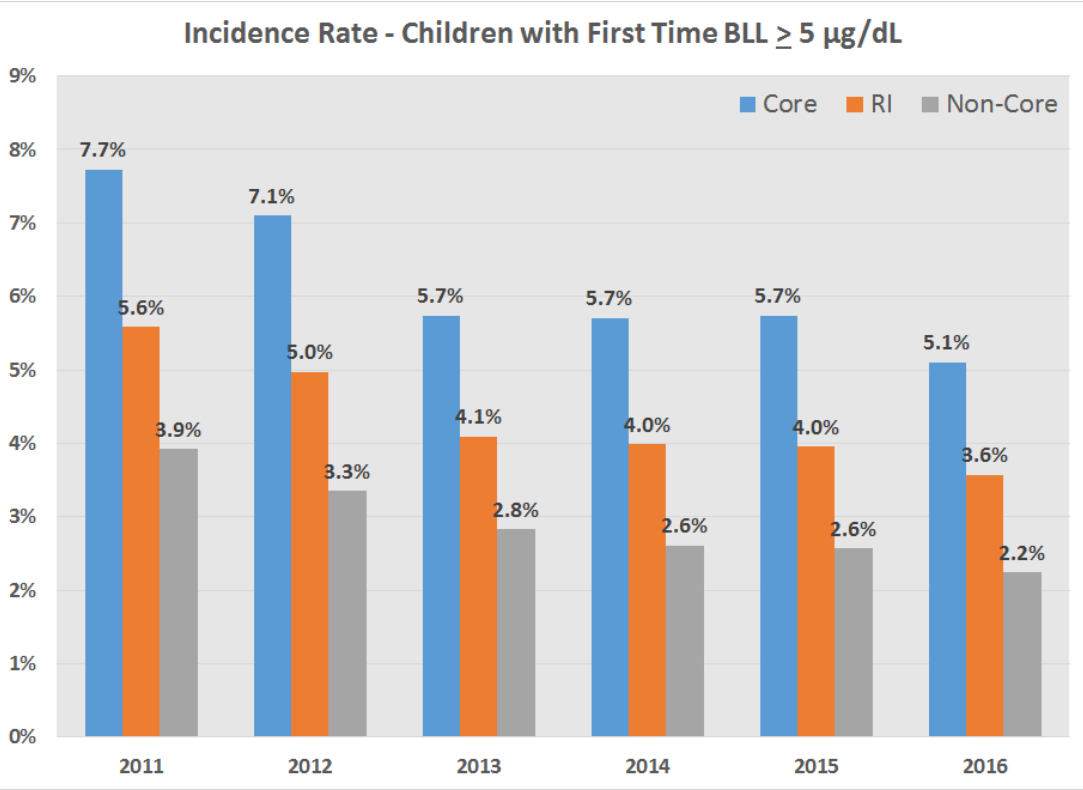
- Rhode Island (RI) is a small state with a big childhood lead poisoning problem.
- One in twelve RI children who have been tested have or have had elevated blood lead levels (EBLLs) when they enter kindergarten.
- Rhode Island's high lead poisoning rate comes as no surprise, since at least 82% of renter occupied homes and 77% of owner occupied homes in RI were built before 1978.
- 87% of extremely low-income families who rent and who have children under the age of 6 years live in homes built prior to 1978.

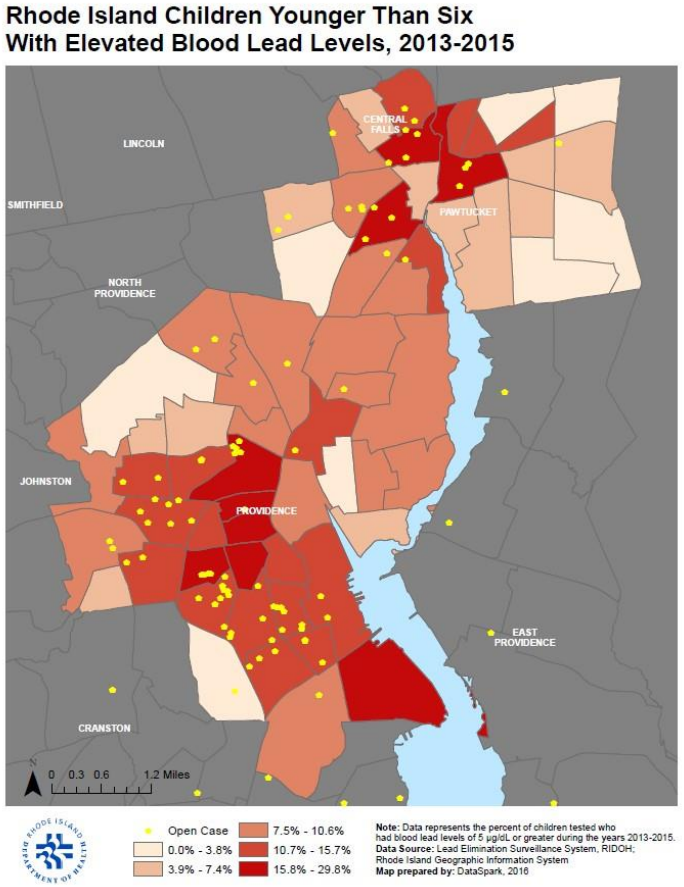
Lead Poisoning in Rhode Island

- RI designates cities with a child poverty rate greater than 25% as Core Cities. These cities also have the oldest housing stock in the State.
- 94% of housing in the Core Cities were built prior to 1978.
- 61% of residences in the Core Cities were built prior to 1940, thus are at highest risk for lead paint.
- The percentage of pre-1940 housing in the Core Cities is approximately twice the statewide rate. RI's pre-1940 percentage is higher than all other states except for Massachusetts and New York.

Core Cities

Lead poisoning is a statewide issue, but rates are highest in sections of the Core Cities.





Legislative Mandates

- Rhode Island General Law 23-24.6 The Lead Poisoning Prevention Act (LPPA), enacted in 1991, established the Rhode Island Department of Health (RIDOH) as the lead agency for lead poisoning prevention in RI.
- RIDOH's responsibilities include overseeing:
  - Training and licensing of inspectors and renovators
  - Blood lead testing of children less than six years old
  - Follow-up services for children with elevated lead levels
    - Case Management
    - Comprehensive Environmental Lead Inspections
  - Inspections of lead hazard removal projects
  - Certification of lead safe conditions
  - Public awareness/education
- LPPA requires RIDOH to promulgate Lead Poisoning Preventing Regulations (216-RICR-50-15-3)

Regulated Persons

- RI law and the Rhode Island Department of Health (RIDOH) lead regulation mandate statewide universal lead screening for all children under the age of 6.

- Healthcare providers are required to conduct blood lead screening tests in accordance with the universal screening guidelines

- Administrators of Schools and Child Day Care Centers must require written verification of blood lead screening completed by the child's health care provider, or other individual who conducted the screening, on forms approved by RIDOH.

Universal Blood Lead Screening Requirements

Screen all children from 9 months to 6 years of age(9 to 72 months) for lead poisoning at least once annually

For a child between 9 and 36 months of age:

- Screen once between 9 and 15 months of age, and
- Screen again 12 months later, between 21 and 36 months of age.

Universal Blood Lead Screening Requirements

If the child has an elevated blood lead level, follow the recommended actions.

For a child between 36 and 72 months of age:

- • If a child was screened at least twice prior to 36 months of age, and any test was greater than or equal to 5 µg/dL, continue to order a blood lead test at least once a year until the child turns 6 years of age.

- • If a child was screened at least twice prior to 36 months of age, and ALL tests were less than 5 µg/dL, the Risk Assessment Questionnaire below can be used instead of a blood lead test, to screen for lead.

- • If a child was NOT screened at least twice prior to 36 months of age, order a blood lead test. If the blood lead level is greater than or equal to 5 µg/dL, follow the Recommended Actions and screen annually.

Note: Children who are developmentally delayed should receive blood lead screening tests at intervals appropriate for their developmental age.

Risk Assessment Questionnaire

If the answer to ANY of these questions is YES, order a blood lead test. If the answer to ALL of these questions is NO, blood lead testing can be discontinued, but the Risk Assessment Questionnaire should be administered annually until the child turns 6 years of age.

1. Does your child live in or regularly visit a house built before 1978 with peeling or chipping paint (day-care center, pre-school, home of babysitter, friend, or relative)?

2. Does your child live in or regularly visit a house built before 1978 that has been renovated or remodeled in the last 6 months?

3. Does your child have a brother, sister, housemate, or playmate who has or did have lead poisoning?

4. Does your child live near an active smelter, battery recycling plant, or other industry likely to release lead?

5. Does your child live with an adult whose job (i.e., construction, painting) or hobby (i.e. pottery, stained glass, furniture refinishing, automotive bodywork, and boat refinishing) involves exposure to lead?

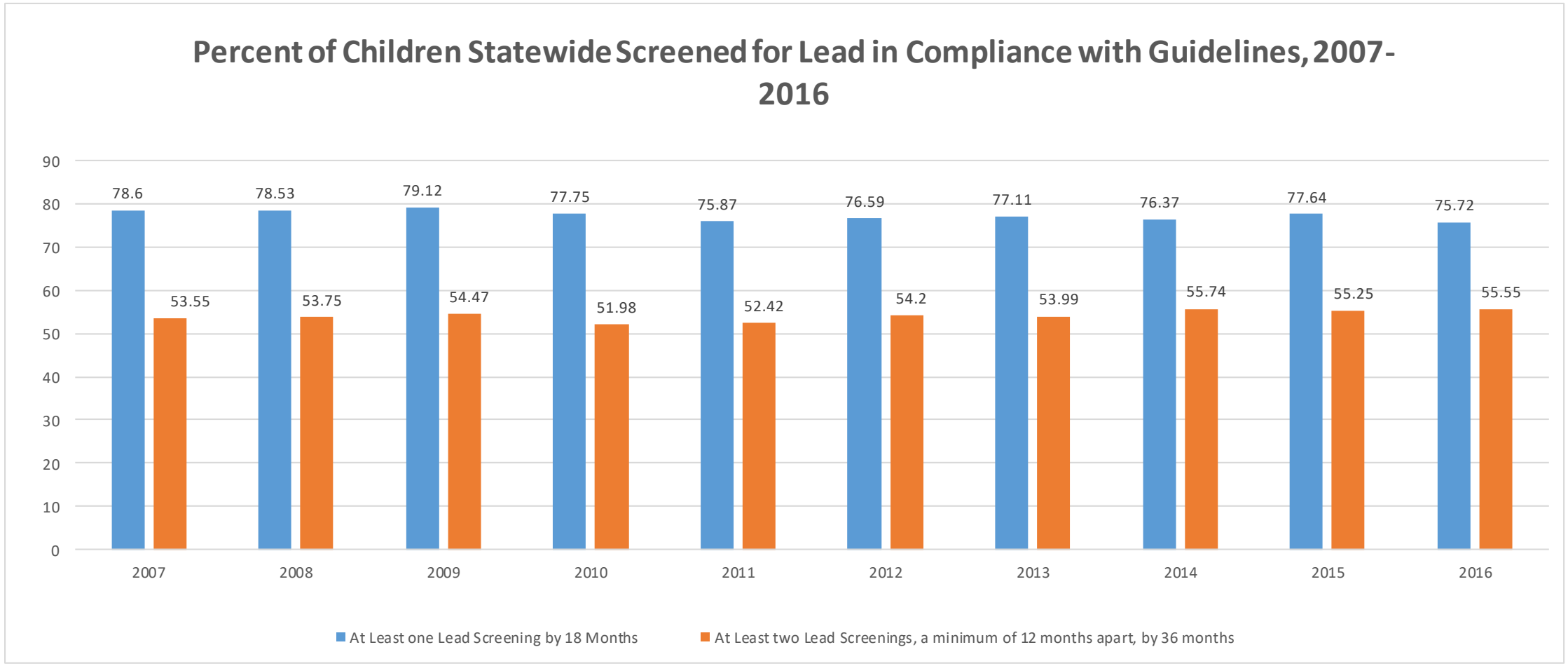
Screening Rates

- RI's universal screening requirement consistently yields high quality data that serve as a credible basis for policy and regulatory decisions.

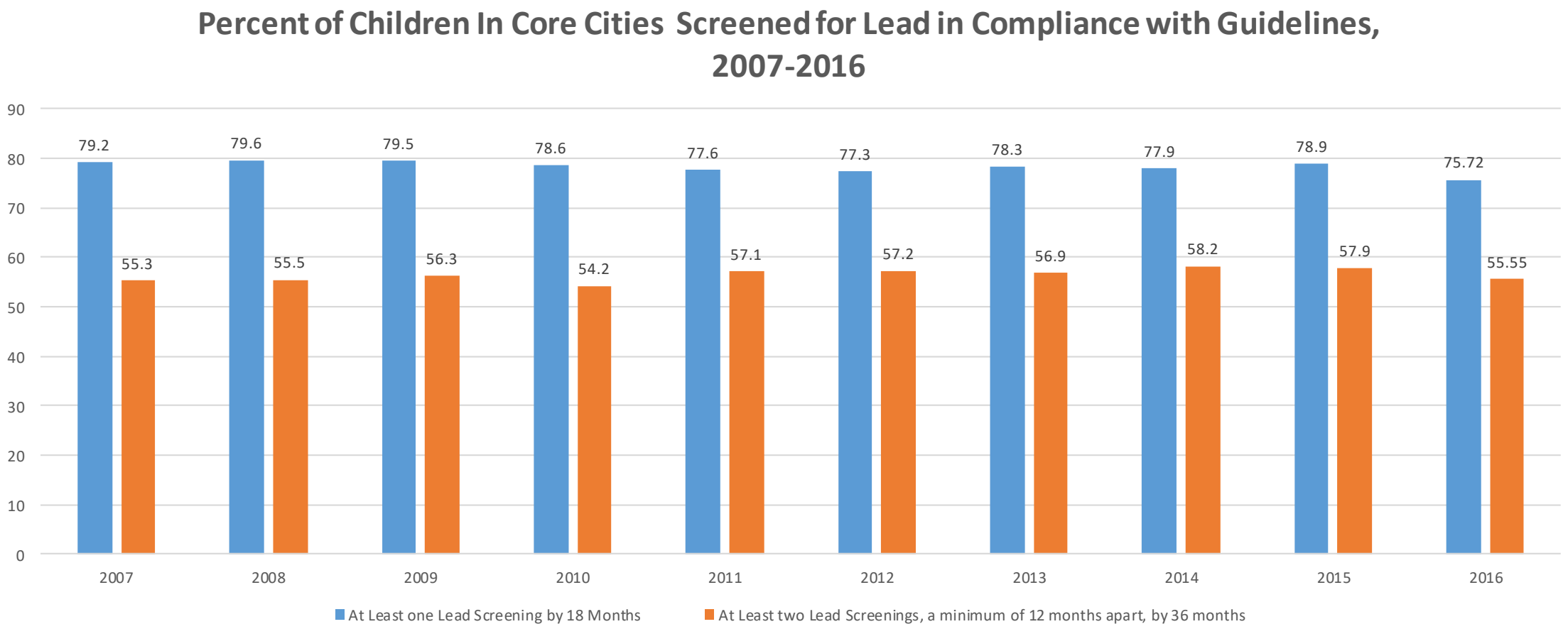
- In 2016, 56% of RI children < 36 months old received two lead screenings and 76% received one screen before 15 months of age, leading to the identification of 842 new cases of BLLs ≥ 5 µg/dL.

- Given that screening rates are not 100%, the actual number of cases is likely to be higher. A recent analysis of children whose initial screen was below 5 µg/dL, showed that failure to conduct a second screen resulted in the under-reporting of about 260 new cases.
  (References: RI Public Health Association 2013).

Screening Rates

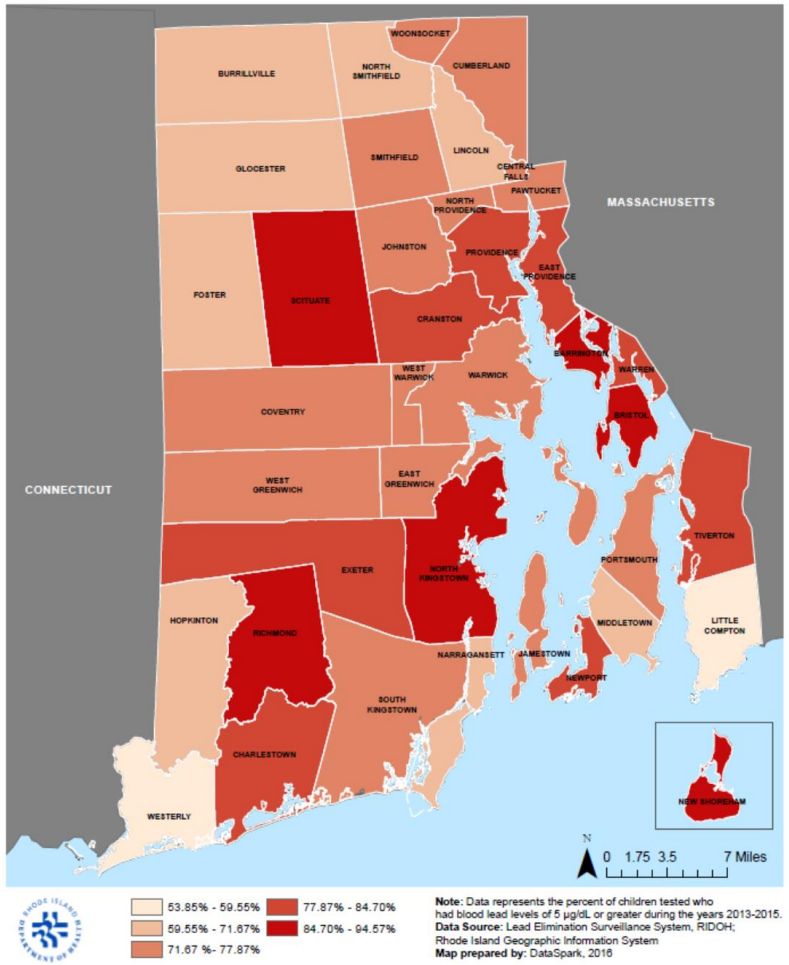


Screening Rates



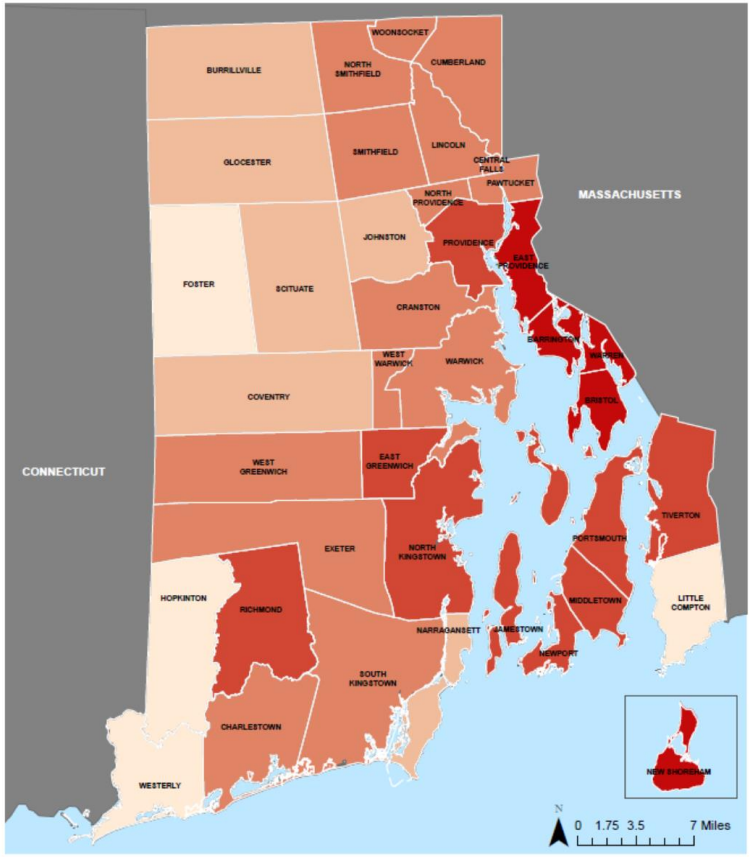
Screening Rates

Rhode Island Children Compliant With First Blood Lead Screening Requirements, 2015



Note: Data represents the percent of children tested who had blood lead levels of 5 µg/dL or greater during the years 2013-2015.
Data Source: Lead Elimination Surveillance System, RIDOH; Rhode Island Geographic Information System
Map prepared by: DataSpark, 2016

Rhode Island Children Compliant With Second Blood Lead Screening Requirements, 2015



Note: Data represents the percent of children tested who had blood lead levels of 5 µg/dL or greater during the years 2013-2015.
Data Source: Lead Elimination Surveillance System, RIDOH; Rhode Island Geographic Information System
Map prepared by: DataSpark, 2016

Screening and Insurance

- In 2016, 24,725 Rhode Island children under the age of 6 years old were screened for lead poisoning. 50% of those screened were Medicaid-eligible and 47% were privately insured.

- The tests identified 842 children who had EBLL ≥ 5 µg/dL for the ***first*** time.

- A total of 1,200 children tested in 2016 had elevated BLLs ≥ 5 µg/dL.
  - 67% of those children were Medicaid-eligible,
  - 30% were privately insured
  - 3% insurance was not reported for

Screening and Insurance

20,524

Rhode Island Children
have had 1st time Blood Lead Levels ≥ 5 mcg/dL
in the last 10 years

Lead Action Level

An action level is the threshold at which blood lead levels can be reduced if effective, evidence-based interventions exist and resources are available.

Lead Action Levels in Rhode Island Revised November 2017	
Blood Lead Level (BLL)	**Interventions Offered**
0-4 µg/dL	▪ BLL within acceptable range.
≥5 µg/dL Capillary test	▪ Primary Care Providers receive a letter recommending venous test confirmation.
5-9 µg/dL Venous test	▪ The family is referred to Lead Center for an educational home visit about lead poisoning, nutrition, and cleaning practices that can protect them from further lead exposure. ▪ The family is referred to the Neurodevelopmental Center at Memorial Hospital of Rhode Island.
≥ 10 µg/dL Venous test	▪ Follow same intervention for 5-9 µg/dL venous test. ▪ The property is referred to a certified lead inspector for a Comprehensive Environmental Lead Inspection **if the child is Medicaid eligible** ▪ The Primary care provider receives a letter with the blood lead result and the contact information of the Lead Center to which the family was referred.
≥15 µg/dL Venous test for children not Medicaid Eligible	▪ Follow same intervention for≥ 10 µg/dL venous test.

Next Steps to Increasing Compliance

RIDOH is launching campaigns to increase screening compliance

- Identifying best practices for medical providers
- Encouraging in office capillary tests
- Lead screening in WIC Centers

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