
**Report to
The Vermont Legislature**

**Lead Poisoning Prevention:
Report on 2018 Program Outcomes and Activities**

In Accordance with 18 V.S.A. § 1756

Submitted to: Vermont General Assembly

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Table of Contents

Introduction.....	3
Measuring Progress.....	3
Barriers to Universal Screening	6
2018 Education and Outreach Activities	7
Future of Vermont’s Healthy Homes Lead Poisoning Prevention Program and Recommendations	8
Estimates of Public and Private Costs	9
Appendix: Statute.....	11

Lead Poisoning Prevention: Report on 2018 Program Outcomes and Activities

Introduction

This annual report on the status of childhood lead poisoning prevention is submitted pursuant to 18 V.S.A. § 1756. Over the past 20 years, Vermont has made steady progress in reducing the number of children with blood lead levels at or above Vermont's current action level of 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$). From 2006 through 2018, the percentage of 1- and 2-year olds with blood lead levels greater than or equal to 5 $\mu\text{g}/\text{dL}$ declined (1-year olds from 19.4% to 4.3%, and 2-year olds from 22.5% to 3.8%). In 2018, there were 362 children ages 1 and 2 who had an elevated blood lead level, down from 412 in 2017. In total, 420 children under the age of 6 had an elevated blood lead level in 2018, down from 480 in 2017.

The percentage of 1-year olds tested each year declined from 82% in 2014 to 77% in 2018. The percentage of 2-year olds tested increased from 44% in 2006 to 72% in 2014 and was 70% in 2018.

The mission of the Vermont Department of Health's Healthy Homes Lead Poisoning Prevention Program (Healthy Homes) is to improve the health and safety of all Vermont home environments through surveillance, collaboration, education, and implementation of comprehensive policies and coordinated programmatic activities. Healthy Homes conducts a variety of lead education and outreach activities that are intended for multiple audiences and designed to prevent lead poisoning, encourage lead screening of 1- and 2-year olds, and support case management for children with elevated blood lead levels. For the dollar amount spent by public agencies in Vermont in 2018 to reduce lead hazards and prevent lead poisoning (\$2,035,556), the State of Vermont could see a return on investment (ROI) of between \$34,604,449 to \$449,857,832. This estimate takes into account the national costs of lead hazard control, reduced health care costs, lifetime earnings, tax revenue, special education costs, behavioral disorders, and crime.

In 2019, Healthy Homes will continue working with the U.S. Department of Housing and Urban Development (HUD)-funded partners to reduce lead hazards in the homes of lower-income families, increasing Vermont lead law compliance among rental property owners, reaching out to health care providers to improve screening rates of 1- and 2-year olds, and conducting educational outreach to parents of young children, emphasizing the importance of lead screening.

Measuring Progress

Testing of 1- and 2-year olds is required under law (18 V.S.A. § 1755). A child's exposure to lead can easily be identified through testing and appropriate interventions can be initiated to prevent further exposure to this harmful toxicant. In addition, testing helps inform the development of lead poisoning prevention policies by giving the Department the opportunity to track statewide trends in childhood exposure to lead.

Healthy Homes works toward achieving the goal of universal testing of 1- and 2-year olds in Vermont. Vermont's definition of an elevated blood lead level is 5 $\mu\text{g}/\text{dL}$, which is aligned with the current Centers for Disease Control and Prevention (CDC) reference level. Table 1 presents

2018 data on the number of young children who were tested for lead and the results of those screenings.

**Table 1
Blood Lead Tests and Results for Vermont Children ages 0 - <6 years, 2018***

Age	Population	# of Tests	% Tested	# < 5 µg/dL	% < 5 µg/dL	# 5-9 µg/dL	% 5-9 µg/dL	# ≥10 µg/dL	% ≥10 µg/dL
Under 1	5960	168	2.8%	158	94.0%	7	4.2%	*	*
1	6010	4640	77.2%	4440	95.7%	157	3.4%	43	0.9%
2	6080	4224	69.5%	4062	96.2%	133	3.1%	29	0.7%
3	6154	328	5.3%	301	91.8%	25	7.6%	*	*
4	6157	170	2.8%	153	90.0%	12	7.1%	*	*
5	6182	76	1.2%	72	94.7%	*	*	*	*
Total	36544	9606	26.3%	9186	95.6%	337	3.5%	83	0.9%

Notes:

* Indicates fewer than six cases in a category that year. When counts and percentages are based on only a few cases, it is impossible to distinguish random fluctuation from true changes in data

Ages: < 1 year: <11 months, 1 year: 11-22.99 months, 2 years: 23-34.99 months, 3 years: 35-46.99 months, 4 years: 47-58.99 months, 5 years: 59-70.99 months.

Population is the average of census estimates or counts from the three previous years (2015, 2016, 2017).

Data include one blood lead test per child by age: the highest venous test result or if there is no venous test, then the capillary test result. This may result in a child having two tests per calendar year. For example, a child may be born in December 2017, have their 1-year old test in January 2018, and then have their 2-year old test in December 2018.

Figure 1

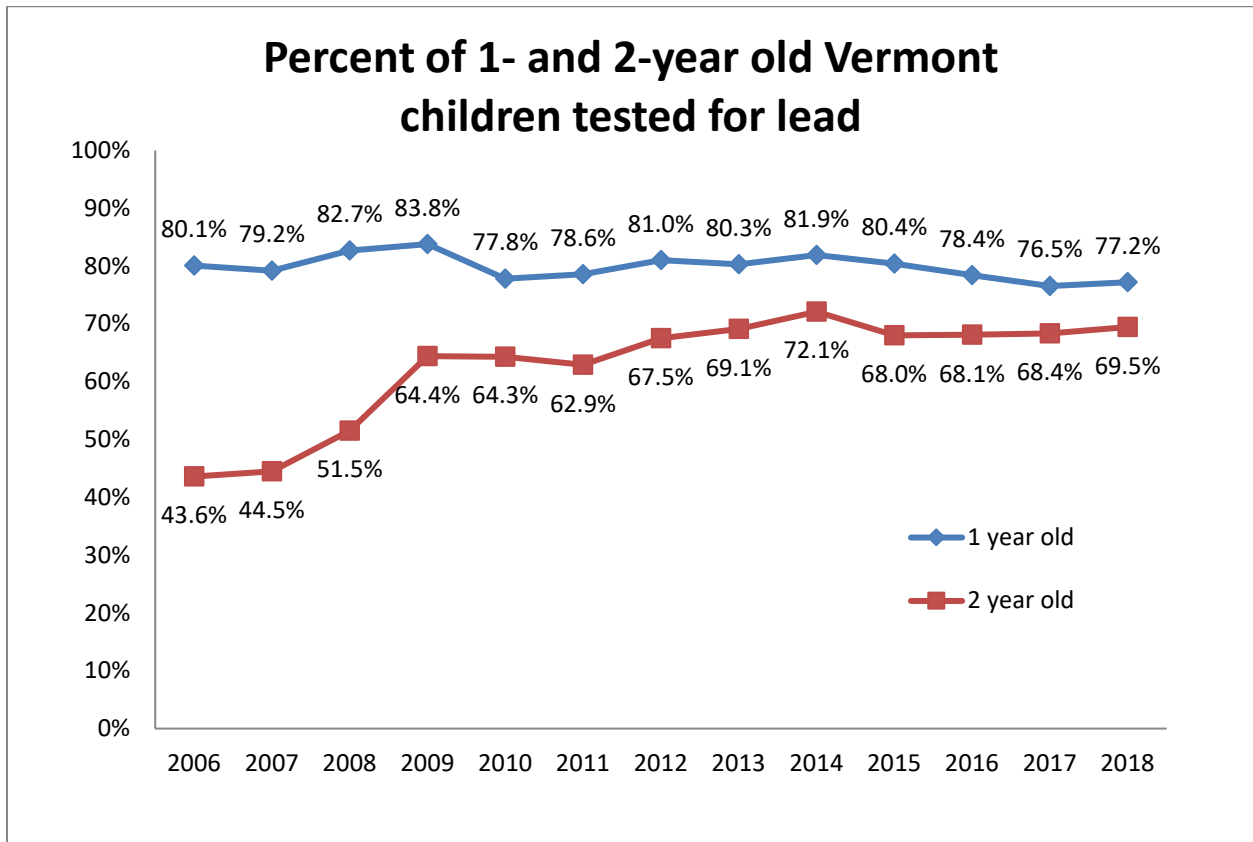


Figure 1 shows the percentage of 1-year olds and the percentage of 2-year olds tested each year from 2006 through 2018. For 1-year olds, about 80% have been tested each year across the time period. However, a steady decrease is observed from 2014 (82%) to 2018 (77%). Statistical analysis indicates that this decrease is statistically significant. For 2-year olds, the percentage tested increased more than 20% between 2006 and 2009. This increase continued until 2014. The percentage of 2-year olds tested has been stagnant from 2015 to 2018.

Figure 2

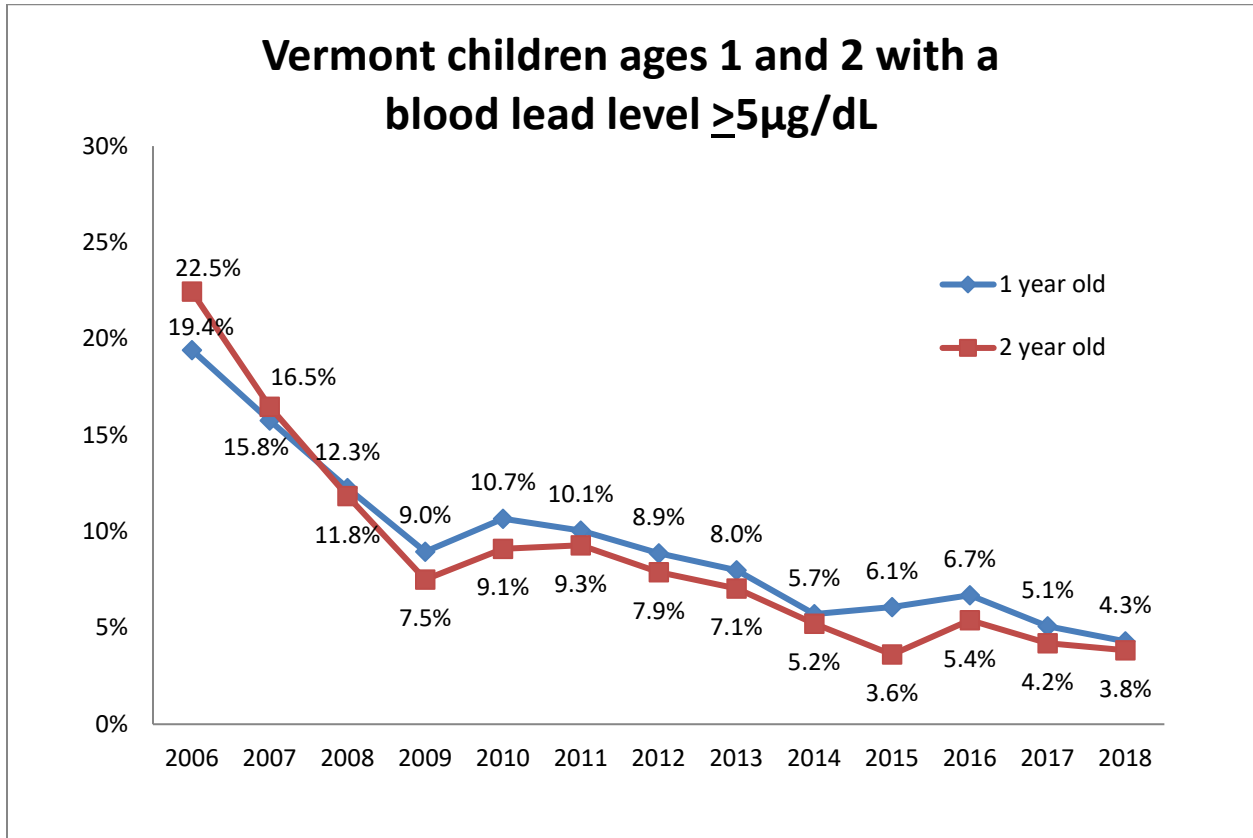


Figure 2 shows the percentage of Vermont 1- and 2-year olds tested who had blood lead levels greater than or equal to 5 µg/dL during the period from 2006 through 2018. This trend shows a decrease in the percentage of 1- and 2-year olds who had elevated blood lead levels.

Barriers to Universal Screening

Lead screening of 1- and 2-year olds is a nationally recognized standard of pediatric care, and Vermont’s universal testing requirement is consistent with this standard. As there are no immediate signs or symptoms of lead poisoning, testing is the only way to know if a child has been exposed to lead. Preventing exposure, therefore, is the key to keeping children safe from lead.

In the past, a number of barriers to testing requirements have been identified. Health care providers have indicated that difficulty obtaining blood samples from infants and young children poses a barrier to testing. Health care providers have also voiced concerns about inadequate cost reimbursement for lead testing and lack of insurance coverage for the procedure. Other barriers have included parental opposition to testing and inaccurate beliefs about who is and who is not at risk for lead poisoning.

To understand these barriers, the Vermont Child Health Improvement Program (VCHIP), in partnership with the Health Department, has created a survey to assess perceived barriers to testing. The survey will be sent to all health care providers currently testing 1- and 2-year olds in Vermont in the Spring 2019. Data gathered will be used to outreach to providers with low testing rates, and offering them support and solutions to increase their testing rates in the Fall 2019.

2018 Education and Outreach Activities

In 2018, the Healthy Homes Lead Poisoning Prevention Program continued the cooperative agreement with the Centers for Disease Control or Prevention (CDC) for lead poisoning prevention. This funding supports the Program's efforts to improve the health and safety of all Vermont home environments through surveillance, collaboration, education, and implementation of comprehensive policies and coordinated programmatic activities. In addition, the Program applied for and received one-year of supplemental funding in October 2018 to work on three CDC pre-approved projects: developing provider report cards, creating a simplified reporting system for Lead Care II (in-office blood lead testing machines) users, and developing a social marketing campaign for parents of 1- and 2-year olds to encourage blood lead testing. The overall goal of these three projects is to strengthen blood lead testing and reporting in Vermont.

An integral part of the program is outreach and support for health care providers and education to the public. The program conducts a variety of lead education and outreach activities intended for multiple audiences and designed to prevent lead poisoning, encourage lead screening of 1- and 2-year olds, and support case management for children with elevated blood lead levels. Below is a sample of activities organized by activity type.

Programmatic Activities and Outreach

- Completed a data update on the Healthy Vermonters 2020 dashboard, which displays the percentage of children ages 1 to 5 with venous blood lead levels in the ranges of 5 to 9 µg/dL and 10 µg/dL and above (viewed here: www.healthvermont.gov/scorecard-environment-food-safety).
- Transitioned to the new CDC database, Healthy Housing Lead Poisoning Surveillance System (HHLPSS).
- Standardized the 12 local health office webpages with information on healthy homes and lead poisoning prevention.
- Continued the campaign around vintage, antique, and salvaged items with advertisements in the *NEST*, a quarterly publication of *Seven Days*, and *Green Living* to intended for do-it-yourselfers and homeowners.
- Conducted outreach during Lead Poisoning Prevention Week (October 21-27, 2018) using the Halloween-themed poster and video developed last year. The Department's district offices used these and other materials to conduct additional outreach during the week, which included lobby displays, presentations, social media posts, letters to health care providers, and posters.
- Collaborated with the Asbestos and Lead Regulatory Program to begin the regional rollout (Morrisville area in March and Barre area in June) of a campaign to raise awareness among landlords and tenants with children under six about the required

Essential Maintenance Practices for pre-1978 rental housing that aim to prevent lead poisoning.

- Worked with HUD-funded partners (Vermont Housing Conservation Board and Burlington Lead Program) to reduce lead hazards in the homes of lower-income families.

Targeted Education

- Provided environmental investigations, educational home visits, and follow-ups for 89 families of children with confirmed blood lead levels of 5 µg/dL or greater.
- Mailed 10,560 postcards to families with 10-month-old children and 22-month-old children who were born in Vermont reminding them to have their children tested for lead.
- Mailed 296 packets to families whose children had a blood lead level from 5 µg/dL to 9 µg/dL that include educational materials, follow-up testing recommendations, and a request form for a free dust wipe kit that enables families to test their homes for lead.

Screening Outreach

- Continued education to health care providers via the Department's district offices regarding the need to test children for lead at both 12- and 24-month well-child visits.
- Educated parents at Women, Infants, and Children (WIC) appointments on the importance of getting their children tested for lead.
- Continued back-up lead testing of children at their 18- and/or 30-month WIC appointments who were not tested by their health care providers at 12 and 24 months.
- Continued to work with the Vermont Chapter of American Academy of Pediatrics under a grant to provide the purchase of in-office blood lead testing machines, known as LeadCare II, for selected pediatric and family practices. The grant supports the purchase of the machines and peer-to-peer education and training with the goal of further reducing known barriers to blood lead screening.
- Began a project in partnership with the VCHIP to survey health care providers to determine barriers to testing and to offer support and solutions to providers with low testing rates.
- Included information about lead screening in letters sent by the Early and Periodic Screening, Diagnosis and Treatment Program advising parents that age-appropriate screening tests are recommended and covered by Medicaid.

Future of Vermont's Healthy Homes Lead Poisoning Prevention Program and Recommendations

In 2019, Healthy Homes will continue work to prevent lead poisoning by making homes safer for children and increasing blood lead testing rates for 1- and 2-year olds through educating parents, providing technical assistance to health care providers, and enforcing the lead testing rules.

HHLPPP will:

- Continue to:
 - Provide outreach, conduct environmental investigations, and provide case management to families with children that have confirmed elevated blood lead levels.

- Send reminder postcards with lead testing information to all families whose children were born in Vermont and are ages 10 and 22 months.
- Work with a marketing firm to develop a social marketing campaign focused on parents and caregivers of children under 2 years of age to raise awareness about lead poisoning and testing for their children and to increase testing rates
- Develop and disseminate annual provider report cards on blood lead testing for all medical practices in Vermont who have 30 or more 1- and 2-year-old patients. The goal is to encourage required testing among health care providers by reporting practice-specific testing rates, comparing their rates with those of their peers, and providing education and guidance about blood lead testing.
- Identify health care providers who have not been testing 1- and 2-year olds for lead and work with them to increase their testing rates.
- Continue working with VCHIP to contact health care providers to determine barriers to testing and offer support to increase their testing rates.
- Compile a comprehensive data report with lead poisoning, screening, case management, and housing information that includes geographic information system (GIS) maps featuring areas of elevated blood lead levels, older housing stock, and low-income status.
- Work with Lead Care II users to improve the accuracy and timeliness of lead test reporting.
- Work with town health officers to identify lead hazards in their communities.
- Maintain and create partnerships with internal and external partners, such as:
 - Vermont Housing and Conservation Board
 - Children's Integrated Services
 - Burlington Lead Program
 - Parks Place Lead Safe and Healthy Homes Program
 - Head Start
 - Environmental Public Health Tracking Program
 - Asthma Program
 - Asbestos and Lead Regulatory Program

Estimates of Public and Private Costs

In the public sector, Healthy Homes expended an estimated \$631,712 in fiscal year 2018. The Vermont Housing and Conservation Board expended about \$990,655 from the Department of Housing and Urban Development (HUD) for lead poisoning prevention in 2018, and the Burlington Lead Program spent an estimated \$413,189 in HUD Lead Hazard Control funds. Combined, these organizations spent an estimated \$2,035,556 in federal and state funds to reduce lead poisoning in 2018.

A study¹ completed by Dartmouth College as part of the *Get the Lead Out of Vermont* Task Force Report in 2006 estimated direct health care costs of all children with elevated blood lead levels at \$51,814 per year and special education costs at \$219,841 per year (considered to be an underestimate because they were calculated only for those children with blood lead levels 25 µg/dL or greater). The report also estimated lost future earnings at more than \$79 million per year for Vermont children (calculated in 2006 and for children with blood lead levels 5 µg/dL or greater). Screening costs incurred by families, insurers, and health care providers are not represented in these cost estimates.

Another study on the social and economic benefits of lead hazard control (Gould, 2009²) estimated a return of \$17 to \$221 for every dollar spent on lead hazard control. This would suggest that for the \$2,035,556 spent in 2018 on reducing lead hazards and preventing poisoning, the State of Vermont could see a return on investment (ROI) of between \$34,604,449 to \$449,857,832. This estimate takes into account the national costs of lead hazard control, reduced health care costs, lifetime earnings, tax revenue, special education costs, behavioral disorders, and crime. For comparison, the estimated ROI of vaccinations is estimated at between \$5.40 to \$16.50 for every dollar spent (Zhou et al., 2005³).

The Pew Center on the States released an issue brief, *Cutting Lead Poisoning and Public Costs*⁴, in 2010. Their research indicated that despite dramatic improvements over the past 30 years, lead poisoning remains a serious hazard for hundreds of thousands of young children in the United States. They concluded that returns on large-scale lead abatement efforts would yield at least \$17 for each dollar invested, which translates to a net benefit of \$181 to \$269 billion. These benefits would be observed in reduced health care utilization, reduced IQ loss, decreased special education needs, higher earnings, and fewer behavior problems and crime.

¹Carlson, C., Y. Feng, D. McClurg, and J. Trummel. "The Costs of Lead Poisoning in Vermont." Dartmouth Center for Evaluative Clinical Sciences (CECS) (2006): 1-27. <https://ago.vermont.gov/wp-content/uploads/2018/03/The-Cost-of-Lead-Poisoning-in-Vermont.pdf>

²Gould, E. (2009, July). Childhood lead poisoning: Conservative estimates of the social and economic benefits of lead hazard control. *Environmental Health Perspectives*, 117(7), 1162-1167. Retrieved February 21, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2717145/>

³Zhou F, Santoli J, Messonnier ML, Yusuf HR, Shefer A, Chu SY. 2005. Economic evaluation of the 7-vaccine routine childhood immunization schedule in the United States, 2001. *Arch Pediatr Adolesc Med* 159:1136–1144

⁴The Pew Center on the States. 2010. *Cutting Lead Poisoning and Public Costs. Partnership for America's Economic Success*, Issue Brief #14. http://www.pewtrusts.org/~media/assets/2010/02/22/063_10_paes-costs-of-lead-poisoning-brief_web.pdf

Appendix: Statute

18 V.S.A. § 1756. Annual report

(a) The Commissioner shall, at least annually, analyze and summarize all aggregate lead screening and testing information provided by physicians, health care facilities, and laboratories and provide this information to all other local and State agencies involved with case management and lead hazard reduction.

(b) The Commissioner shall also at least annually provide to the General Assembly, the health community, and the general public an analysis and summary of such data and a progress report on the Commissioner's efforts to prevent lead poisoning in young children in a format that is easily understandable to nontechnical readers. The report shall include:

(1) The number and percentage of children under the age of six who have been screened and tested for lead poisoning, and the number found to have lead poisoning at various levels.

(2) Estimates of the public and private costs incurred since July 1, 1993 to prevent, correct, or treat lead poisoning.

(3) An analysis of barriers to universal blood screening of children under the age of six years.

(4) The Commissioner's recommendations for action. (Added 1993, No. 94, § 3.)