

Lead Elimination and Response Costs Workgroup

(Fiscal Year 2020 Appropriation Act - Public Act 67 of 2019)

September 15, 2020

Sec. 1238. The department shall establish a workgroup to determine the cost of establishing lead elimination and response. By March 1 of the current fiscal year, the department shall provide a report on the findings of the workgroup to the house and senate appropriations subcommittees on the department budget, the house and senate fiscal agencies, the house and senate policy offices, and the state budget director.



Section 1238 PA 67 of 2019

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Introduction and Executive Summary

The Michigan Department of Health and Human Services (MDHHS) and the Section 1238 Lead Elimination and Response Workgroup respectfully submit this report in response to Section 1238 of PA 67 of 2019.

The MDHHS was required to convene a workgroup to determine the “costs of lead elimination and response.” MDHHS conferred with appropriate legislators to gain a greater understanding of the goals of the budget request and clarified the intent of this section was to develop a cost estimate for local health departments (LHDs) to provide comprehensive lead elimination and response in every jurisdiction in the state. Accordingly, MDHHS convened a Workgroup that included representatives from LHDs, non-profit advocacy organizations, and an outside consultant advisor. The Workgroup met two times in person and three times virtually between February and August.

This report, which reflects the deliberations of the Workgroup, provides background on lead hazards and the components of public health response, the process by which the Workgroup developed the cost estimate, the range of cost estimates under consideration, and the recommended amount. Its recommendations reflect the Workgroup’s best collective assessment.

The Workgroup’s funding recommendation is based on the following principles.

- There is no safe level of lead in the body.
- Universal blood lead testing of all children at age one and two is essential to ensure comprehensive lead elimination and response.
- Funding and subject matter expertise in multiple disciplines must be available to every LHD regardless of size of the population under its jurisdiction.
- A comprehensive LHD lead elimination and response program includes blood lead testing and surveillance, environmental investigation, and public health response to children with lead in their blood, and public education. Oversight and conduct of actual lead abatement in homes is carried out by other agencies.

Funding Recommendation

- **\$86,542,485** annually would be sufficient for a comprehensive program in every LHD for lead elimination and response.
- **\$105,206,193** annually would be desirable for an enhanced, fully funded, comprehensive program in every LHD for lead elimination and response.

The Workgroup’s funding recommendation recognizes the Legislature's important role in reviewing spending needs and priorities each year. MDHHS and LHDs continue to work diligently to end lead poisoning in our state while being prudent with resources allocated to this effort.

Workgroup members were extremely challenged during this process because of the response to the COVID-19 pandemic and the need for keeping their communities safe. Even though attending each Workgroup meeting or reviewing each detail in this report may not have been possible for some Workgroup members, every Workgroup member remains deeply committed to lead poisoning prevention, the elimination of lead hazards in our state, and serving all Michigan families to these ends.

Background: Lead hazards and public health response

Lead is a neurotoxin, and its effects on a child's brain are irreversible. There is no safe level of lead in a child.¹ Michigan's children continue to be unnecessarily exposed to lead and this exposure disproportionately impacts low-income and minority children. The most common identified sources of lead for children are lead paint and lead dust in homes built prior to 1978. Young children, with their propensity for hand-to-mouth activity and exploration, ingest lead that is found on windowsills, floors, and soil. Additionally, lead in drinking water can also be a serious threat to children and pregnant women.² Other sources of lead exposure that affect children and adults include occupational exposure (with the risk of lead exposure to family members from lead dust brought home on work clothes); some imported cosmetics, diet supplements, spices, and dishware; and hobbies like stained glass and bullet making.³

Exposure to lead is measured by blood tests, where a laboratory determines how much lead is in the blood. A blood lead level (BLL) is considered elevated (EBLL) per Michigan's standards when the BLL is equal to or exceeds 4.5 ug/dL.⁴ Tests are performed on capillary or venous blood. A venous blood retest should be used to confirm elevated levels from capillary samples because tests on capillary samples are prone to false-positive results.⁵

Michigan's Federally funded Medicaid and Women, Infants and Children (WIC) nutrition program requires BLL testing of children under age 6;^{6,7} however, this is not universally practiced across the state. As per MDHHS' current policy of targeted rather than universal blood lead testing, health care providers are advised to test other children under age 6 who are at risk of lead exposure, based on a risk screening questionnaire.⁸ As the Michigan Child Lead Poisoning Elimination Board noted in their 2016 report, the current targeted testing approach likely misses the identification of many exposed children and thus creates gaps in prevention and treatment.⁹

Laboratories are required to submit all blood lead test results to the MDHHS Childhood Lead Poisoning Prevention Program (CLPPP) under the Public Health Code.¹⁰ CLPPP manages the test results electronically, and analyzes and shares the data with LHDs and other programs and agencies involved in lead elimination and response.¹¹

LHDs play a key role in lead elimination and response.¹² They can use BLL data to provide nursing and environmental investigation services to children with EBLLS, refer families with EBLL children for services from other programs (including lead hazard abatement in homes), provide community-wide education, enforce local codes and ordinances and state regulations related to lead-safe housing, and screen children in their public health and WIC clinics for lead exposure. Historically, capacity limitations (staff and funding) have prevented many LHDs from prioritizing these lead poisoning prevention activities.¹³

Report Development Process

Establishing the Workgroup

In response to the Section 1238 request from the legislature, MDHHS held an initial scoping meeting in December 2019 with their staff involved in lead poisoning prevention to develop a timeline and action steps. MDHHS then conferred with appropriate legislators to gain a greater understanding of the goals of the budget request and clarified the Workgroup should focus on costs associated with comprehensive lead elimination and response that would apply to LHDs.

Accordingly, a Workgroup was assembled, with the assistance of the Michigan Association for Local Public Health (MALPH). It included 16 representatives from LHDs, two representatives from non-profit advocacy organizations, 8 representatives from MDHHS, a project consultant advisor, and a Workgroup facilitator. Two LHD workgroup members resigned in June, one because of lack of time and the other because of extended medical leave. The list of Workgroup members is in Appendix 1.

The Workgroup met twice in-person and three times virtually between February 12, 2020 and August 3, 2020.

Workgroup Tasks

Lead elimination and response involve both primary prevention (elimination of lead in the environment before children can be exposed) and secondary prevention (identification of and response to children who have been exposed and have detectable levels of lead in their bodies). Many agencies and organizations are involved in these activities.

Workgroup Task #1: Identification of components of comprehensive lead elimination and response

The Workgroup's first task was to identify the specific components of lead elimination and response for which LHDs have primary responsibility and/or assurance responsibilities. This was accomplished by discussion during meetings and a survey of workgroup participants.

The major components and the agencies/organizations with primary responsibility are delineated in Table 1. The Michigan Public Health Code obligates MDHHS and LHDs to investigate exposures to environmental hazards to protect health. Lead is one of those well documented hazards. Note: Even where LHDs do not have primary responsibilities they generally work to support the primary agencies.

Table 1: Lead hazard identification and response components by governmental and private sector agencies with primary responsibility.

Lead Hazard Identification/Response Components	Government Agencies with Primary Responsibility	Private Sector Entities with Primary Responsibility
Lead Hazard Identification		
Blood lead testing	LHDs	Medical professionals, Managed care organizations
Public health monitoring of blood lead test results	MDHHS, LHD	
Public health investigations of lead exposure (i.e., environmental lead investigations) of individuals and communities, which involve assessment and testing of homes of children with EBLL for lead in dust, paint, soil, water.	MDHHS, LHD	Licensed inspectors/risk assessors
Environmental source investigation: public water, outdoor environments	Michigan Department of Energy, Great Lakes and Environment (EGLE)	Regulated entities
Environmental/blood lead testing: worksites	Michigan Occupational Safety and Health Administration (MIOSHA)	Employers
Lead Hazard Response		
Nurse case management for children with EBLL: referral for lead abatement	MDHHS, LHD	Medical professionals, Medicaid Managed Care
Education of families, public and provider about lead sources, remediation, services etc.	MDHHS, LHD	Medical professionals, Medicaid Managed Care, non-profit partners
Lead remediation/abatement of homes of EBLL children	MDHHS, municipalities	Property owners, contractors, non-profit partners
Lead remediation/abatement of homes of other children/pregnant women	MDHHS, municipalities	Property owners, contractors, non-profit partners

Lead remediation/abatement - schools/daycare	MDHHS, municipalities	Property owners, contractors
Lead remediation - water supplies	EGLE, municipalities, Public Water Supply Owners	Public Water Supply Owners
Lead remediation - contaminated soil	EGLE	Responsible Party/ Business entities, contractors
Control of lead exposure in worksites	MIOSHA	Company owners
Interdiction of contaminated products (e.g. contaminated imported spices, and other exposures e.g. take-home lead)	LHD, Michigan Department of Agriculture and Rural Development. MIOSHA	

A detailed table of the roles of LHDs in the components of lead elimination and response and the MDHHS functions in support of LHDs is in Appendix 2. It does not enumerate functions of agencies and entities outside of LHDs and MDHHS.

Workgroup task #2: Identify goals for the comprehensive system

The Workgroup’s next task was to identify the goals for the major components of the comprehensive system as they apply to LHDs, the rationale for these goals, and the gaps between current practice and these goals. Their conclusions closely mirror the findings and recommendations of the Michigan Child Lead Poisoning Elimination Board.⁸

Component #1: Blood lead testing

Goal: *Every child is tested for lead at age one and two (universal testing) or if not, by age six.*

Rationale and current practice: Comprehensive lead elimination and response is based on assuring that every child in Michigan is tested for blood lead by age 6 years. Michigan policy currently is targeted testing rather than universal testing. Targeted testing includes testing of all Medicaid children at age one and two (or if not by then, once by age six), and testing of children who have been identified as being at risk of lead exposure based on a risk assessment questionnaire.⁷ However, the Michigan Child Lead Poisoning Elimination Board found that targeted lead screening recommendations create gaps in prevention and treatment and miss the identification of all exposed children. Therefore, the Board stated: “the only way to truly eliminate child lead exposure is to test every child in Michigan” and recommended that 100% of children are tested.⁸ The Michigan Child Lead Exposure Elimination Commission, which was established by the Governor in 2017 to ensure successful implementation of the Board’s recommendations, made implementation of universal testing its first priority.¹⁴

Component #2: Lead education

Goal: *Lead education is provided for the families of every tested child with lead detected in blood.*

Rationale and current practice: Currently, public health actions are triggered by a blood lead level defined as elevated, or ≥ 4.5 $\mu\text{g}/\text{dL}$. However, given that any detection of lead in blood is an indication of exposure and given that there is no established safe level of lead in blood, it is vitally important that the family of every child with lead detected in their blood have, at a minimum, an educational intervention.

Blood Lead Levels for Public Health Actions

- **Any detectable level**
 - Education of child and family
- **Elevated (defined as ≥ 4.5 $\mu\text{g}/\text{dL}$)**
 - Nurse case management
 - Environmental investigation

Component #3: Data

Goal: *The data management system captures both blood lead testing data and environmental data including testing and abating of homes.*

Rationale and current practice: Current lead data management systems are fragmented and do not have the necessary functionality to support LHDs in their work. MDHHS is in the process of evaluating how to integrate its statewide blood lead testing data with its lead home inspections/abatement data, so that the data systems will have the full functionality needed by public health officials at all jurisdictional levels to track and understand lead exposure statewide.

Component #4: Interventions for children with EBLLs (defined as 5 micrograms per deciliter of blood or greater).

Goal: *Every EBLL child receives nurse case management and/or case management services provided by non-nurses (e.g. social workers, community health workers).*

Rationale and current practice: Currently LHDs can bill Medicaid for nurse case management services only for Medicaid-enrolled children with venous-confirmed EBLLs. The Medicaid rate does not cover all the costs associated with a completed home visit (e.g. telephone calls, attempted home visits, mailed materials). Many case management services can be provided by professionals in disciplines other than nursing, similar to services for children enrolled in Children’s Special Health Care Services, but LHDs cannot be reimbursed for these.

Component #5: Identifying lead hazards

Goal: *The home of every child with an EBLL is inspected and tested for lead hazards in paint, soil, dust, and water without cost to the family.*

Rationale and current practice: Currently, the MDHHS Lead Safe Home Program (LSHP) provides environmental investigations in the homes of children whose families meet certain eligibility criteria. A small number of LHDs provide this service for families with children with EBLL who do not meet LSHP eligibility criteria. These investigations are conducted by trained MDHHS, local Community Development grantees, LHD sanitarians or by contracting with commercial firms. Jurisdiction-wide information and education about lead hazards in homes, home inspections, and lead hazard abatement are essential to

inform parents and the public and ultimately achieve the goal of no children in Michigan with lead in their blood.

Goal: Financial assistance is available to families of children with higher BLLs to relocate to prevent their children from further lead exposure.

Rationale and current practice: Currently there is very limited funding from the MDHHS LSHP to help those families of children undergoing medical treatment for lead poisoning with temporary housing until permanent lead-safe housing is available to them. This means that many children who have EBLLS continue to be exposed to a source of lead within the home environment because relocation is not an option financially. Although permanent relocation could be less expensive than lead home abatement in the long run, there are no funds to assist families in finding new, lead-free permanent housing.

Component #6: Infrastructure/staffing

Goal: Every LHD has a minimum of one full time equivalent (FTE) to maintain a coordinated, comprehensive lead elimination and response program and has access to sufficient staff in appropriate professional disciplines to administer all components of comprehensive system , including epidemiologists, data managers, sanitarians, community health workers, nurses, social workers.

Rationale and current practice: Although a few LHDs have one or more FTEs fully dedicated to lead elimination and response, some have none or less than one dedicated FTE due to lack of resources. Lack of staff in a variety of professional disciplines greatly limits their ability to provide continuous and high quality multi-disciplinary response and program management. LHDs must have access to epidemiologists, data managers, sanitarians, community health workers, nurses, and social workers. They also need to have at least one full-time FTE dedicated to coordinating professional services provided within the agency and across the many involved agencies to ensure that the children receive all services needed to eliminate their risk of further exposure to lead in the environment.

Workgroup task #3: Develop the cost estimate

After the first meeting the Workgroup members were asked by the Workgroup facilitator to complete a survey related to identifying components of the comprehensive program and providing a rough estimate of what it would cost.

At the second meeting, Workgroup participants discussed survey results, brainstormed factors that should be included in developing the cost estimate in more detail, and the cost estimate options provided by the survey respondents. They discussed approaches based on costs of staff FTEs, costs per unit (e.g., children, homes), and a hybrid of FTEs and unit costs.

Also at the second meeting MDHHS provided information about funding currently provided to LHDs for lead elimination and response, e.g. reimbursement by Medicaid for nurse case management for Medicaid-enrolled EBLL children, so that the funding recommendation would take into consideration funding already provided to LHDs.

Based on the survey results and discussion at the second meeting, the Workgroup facilitator built a spreadsheet with several alternatives for itemized costs of elements of a comprehensive program that were identified by workgroup members. The spreadsheet was emailed to the workgroup for consideration, and it went through several modifications based on Workgroup member reviews. The modified spreadsheet was discussed at the third meeting. It included cost estimates of \$43 million and \$100 million. At the request of the participants in the third meeting, a third alternative, for \$81 million, was developed after the meeting.

At the same time, the Workgroup was provided a cost estimate of \$7.3 million for what MDHHS would need to support any of LHD cost estimate options. Funding would be for program staffing, laboratory support (equipment, materials, and personnel), computer application redesign, and program evaluation. MDHHS also identified funds they provide annually to LHDs for lead elimination and response, which would be subtracted from the amount recommended for LHDs.

At the fourth meeting on August 3, 2020, the three LHD cost estimate proposals were discussed. After discussion and straw polls, the meeting participants concluded that \$43 million was not sufficient, but that \$81 million would be sufficient for every LHD to provide comprehensive lead elimination and response, and that \$100 million would be ideal, providing funds for enhanced lead elimination and response activities. Reasons to support or oppose are summarized in Table 2.

Itemized budgets for the \$43 million, \$81 million, and \$100 million LHD options and the MDHHS support budget of \$7.3 million are included in Appendix 3.

Table 2: Three proposed cost estimates for LHD comprehensive lead elimination and response, cost basis, and reasons to support and oppose each of the alternatives

LHD Cost Estimate	Cost basis	Reasons for support	Reasons to oppose
\$43 million	Based on services related to testing of <i>all</i> estimated 230,00 children at age one and two each year and 6,000 children with EBLs	<ul style="list-style-type: none"> Reflects recommended policy of testing all children at age one and two (universal testing) rather than testing of at-risk children only (targeted testing). Includes a minimum of 1 FTE for every LHD, plus additional 135 SME FTEs to be allocated as needed 	<ul style="list-style-type: none"> Does not include funding for enough FTEs for comprehensive lead elimination and response programs in every LHD.
\$81 million	Based on services related to testing of all estimated 230,00 children	<ul style="list-style-type: none"> Reflects recommended policy of testing all children at age one and two 	<ul style="list-style-type: none"> May be difficult to recruit so many new staff in appropriate professions.

	<p>at age one and two each year and 6,000 children with EBLLs,</p> <p><i>AND</i></p> <p>Minimum of 4 SME FTEs in every LHD and additional 180 FTEs to be allocated to LHDs depending on need.</p>	<p>(universal testing) rather than testing of at-risk children only (targeted testing).</p> <ul style="list-style-type: none"> • Provides for a minimum of 4 FTE SMEs for every LHD, plus additional 180 SME FTEs to be allocated as needed. • Provides more funds to promote testing in provider offices and conduct environmental investigation than \$43 estimate. • Is the minimum likely needed for LHDs to address comprehensive lead elimination and response. 	
\$100 million	<p>Based on services related to testing of all estimated 230,00 children at age one and two each year and 6,000 children with EBLLs,</p> <p><i>AND</i></p> <p>Minimum of 4 SME FTEs in every LHD and additional 250 FTEs to be allocated to LHDs depending on need.</p>	<ul style="list-style-type: none"> • Ensures that even the smallest LHDs have funding and enough full-time SME staff to cover all functions of comprehensive program. 	<ul style="list-style-type: none"> • May be difficult to recruit even more new staff in appropriate professions.

Outcome: Funding recommendation

Consensus principles for the recommendation:

- There is no safe level of lead in the body.
- Universal blood lead testing of all children at age one and two is essential to ensure comprehensive lead elimination and response.
- Funding and subject matter expertise in multiple disciplines must be available to every LHD regardless of size of the population under its jurisdiction to serve all Michigan children.
- Regionalization of resources and expertise can be a cost-effective approach for smaller LHDs.
- The Workgroup noted the public health threat of lead in the environment is a long-term problem and that comprehensive lead elimination and response require a long-term commitment of funds to every jurisdiction in the state in order to eliminate the cost burden of poor health outcomes for the State of Michigan and to retire the need for continual intervention.
- The Workgroup recognized the challenges of the tremendous impact of COVID-19 on public health priorities and Michigan's state budget in 2020, yet also recognized that the cost of inaction on lead remains in place even during the pandemic. It should be noted that shelter-in-place and home-bound learning during the pandemic increases the time children are at home and potentially exposed to lead in older homes.

Scope of the funding recommendation

- This report provides an overall annual cost estimate recommendation for the funds needed by LHDs for comprehensive lead elimination and response
 - The amount of funds currently allocated by MDHHS to LHDs for lead elimination and response is subtracted from the cost estimate.
 - In future years, the amount of funds needed by LHDs for comprehensive lead elimination and response may decrease if the program is successful.
- This report does not recommend a formula for how resources should be allocated to each of Michigan's 45 LHDs, recognizing that such a recommendation would need to take many factors into consideration.
- This report also includes a cost estimate for MDHHS to support LHDs.
 - The MDHHS budget includes several one-time costs for year one, for computer application/development and laboratory equipment, that would not be needed in subsequent years.
 - The MDHHS budget includes estimated annual costs for a comprehensive process and outcome evaluation to be conducted by an outside contractor.
- This funding recommendation does not include direct costs for abatement of lead hazards in homes, water systems, or other environments, because direct lead abatement is outside the scope of LHD activity.

Funding recommendation

The Workgroup concluded that **\$86,542,485** annually would be sufficient for comprehensive lead elimination and response programs in every LHD. (Table 3)

- This would support a minimum of four FTE professional staff in the disciplines needed to address lead, which may include nurses, epidemiologists, sanitarians , and others, in every one of the 45 LHDs and additional professional and administrative staff distributed among the LHDs as needed.
- It would provide funds for MDHHS support to the program.
- It subtracts the amount already provided annually by MDHHS to selected LHDs for lead.

The Workgroup concluded that **\$105,206,193** would be needed annually for an enhanced, fully funded, comprehensive lead elimination and response program in every LHD. (Table 3)

- In addition to the \$81 million cost estimate, this estimate includes support for additional professional staff in the multiple disciplines needed to address lead and enhancements to prevention programs.

Table 3: Sufficient and Full Annual Cost Estimates for Comprehensive Lead Elimination and Response Programs in all LHDs.

<u>Sufficient Funding for Comprehensive Program</u>	
Cost estimate for LHDs	\$81,073,213
Less funds provided by MDHHS	(\$1,840,494)
Total LHD	\$79,232,719
Funds for MDHHS support	\$7,309,766
Grand total	\$86,542,485

<u>Full Funding for Comprehensive Program</u>	
Cost estimate for LHDs	\$99,736,921
Less funds provided by MDHHS	(\$1,840,494)
Total LHD	\$97,896,427
Funds for MDHHS support	\$7,309,766
Grand total	\$105,206,193

Appendix 1: Section 1238 Workgroup Members

External Workgroup Members			
Last	First	Agency	Title
Agboka	Andrea	Oakland County Health Division	Nursing supervisor
Austerberry	Carol	Wayne County Health Department (HD)	Health Officer (HO) and Environmental Health (EH) director
Bianchi*	Anne	District Health Dept 10	WIC Program Director
Bora	Nirali	Kent County HD	Medical Director
Bowen	Ken	Ionia County HD	HO and EH director
Brink	Gail	Kent County HD	Finance Director
Britten*	Nicki	Berrien County HD	HO
Drautz	Tony	Oakland County Health Division	Environmental Health Administrator
Haan	Paul	Healthy Homes Coalition of W. Michigan	Director
Keast	Jill	Muskegon County HD	Public Health Education Supervisor
Nickert	Jane	Washtenaw County HD	Director of nursing
Reichard	Tom	District Health Dept 10	EH Director
Reynolds	Tina	Michigan Environmental Council	Environmental Health Program Director
Ridella	Bill	Macomb County HD	HO
Simmonds	Sara	Kent County HD	EH Director
Surma	Aimee	Detroit HD	Lead intervention and Prevention Program Manager
Travis	Rashmi	Jackson County HD	HO
Withington	Scott	Detroit HD	EH Manager

* Resigned in June 2020

MDHHS Workgroup Members, Project Consultant Advisor, and Project Facilitator			
Last Name	First	Program	Title
Bell	James	Public Health Administration	State Administrative Manager
de la Rangelje	Laura	Local Health Services - Bureau of Health and Wellness	Director
Groetsch	Kory	Division of Environmental Health	Director
Largo	Tom	Environmental Epidemiology Section	Section Manager
Lyon-Callo	Sarah	Bureau of Epidemiology and Population Health	Director
Medina	Angela	Childhood Lead Poisoning Prevention Program	Health Educator
Speidel	Carin	Healthy Homes Section	Section Manager
Stanbury	Martha	Division of Environmental Health	Public Health Consultant and Project Facilitator
Stoltman	Gillian	Independent Project Consultant Advisor	
Twichell	Michelle	Childhood Lead Poisoning Prevention Program	Unit Manager
Wisinski	Courtney	Healthy Home Section	Departmental Manager

Appendix 2: Components of Comprehensive Lead Response and Elimination: Local Health Department and MDHHS Support Functions

Component Category	Component Goals	Local Health Department Functions	MDHHS Support Functions
BLL testing	All children are tested once at ages one and two, or if not, by age 6 ("universal testing").	Educating providers and the public about universal testing. Collaborating with Medicaid Health Plans to improve testing rates. Monitoring provider offices for compliance with screening/testing. Identifying and overcoming barriers to testing. Testing all children in public health and WIC clinics.	Working with policymakers and professional associations to ensure support for universal testing. Statewide education about testing recommendations. Developing, disseminating educational materials for use locally. Developing, maintaining policies and procedures for testing. Providing data to track successes in testing. Developing/maintaining capacity in MDHHS Bureau of Laboratories to analyze all submitted BLL specimens.
	At risk pregnant/breastfeeding women are tested.	Educating OB/Gyn and Nurse Midwives to identify at risk women for testing.	
	Elevated capillary tests get confirmatory venous	Educating health care providers about the need for venous testing. Outreach to families of children with EBLL test results by capillary blood to encourage venous testing, facilitating overcoming barriers to venous testing (e.g., transportation). Providing venous retesting in public health and WIC clinics.	
BLL data	Data management system has functionality to track tested children including nurse case management, venous retesting, links to environmental investigation and exposure mitigation.	Entering information collected during case follow-up into data system. Using system to track follow-up with EBLL children.	Replacing current systems with a state-wide data management system that has functionality needed by LHDs.

	Data management system is used by LHDs to generate reports and conduct data analysis; communicate summary data results to public.	Analyzing data. Using data to target resources and activities. Communicating summary data to the public and policymakers.	Conducting in-depth data analyses statewide to identify high risk communities, risk factors, trends over time, compliance with reporting laboratory results and testing requirements,
Services to tested children	Families of every child with lead detected in blood are educated about the test results.	Educating providers and providing family handouts so they can educate families of tested children. Making direct contacts with families for education.	Developing and disseminating educational materials.
	Every venous confirmed EBLL child receives case management.	Educating every EBLL family by mail/phone. Providing EBLL nurse case management to venous confirmed EBLL children. Providing alternate/non-nurse EBL case management services as needed.	Developing/maintaining EBL case management protocols and training for LHD staff.
	Children with very high BLLs receive medical treatment as indicated.	Ensuring that children with high BLLs are referred immediately to facility that can provide medical treatment and working with the family to ensure that the child will have a lead-safe home at discharge.	Providing technical support and direction on medical and case management.
	EBLL services are coordinated with other services (e.g., MIHP, CSHCS, Medicaid Managed Care, mental health).	Developing/maintaining compendium of community resources. Maintaining communications with other service providers and data systems to ensure coordination of services.	Providing materials, training, and statewide coordination.
Lead hazards identified	The home/alternate home of every child with confirmed EBL has an Environmental Investigation.	Working with EBLL families to complete application to MDHHS LSHP to request Environmental Investigation. Providing Environmental Investigations by trained LHD staff.	Maintaining systems for reviewing/approving LSHP applications. Overseeing training programs and licensing LIRA inspectors with EBLL endorsement.

	The public is educated about hazards of lead in homes, including when homes should be tested and where to request the environmental investigation.	Educating the public and property owners about how to identify lead hazards and where to go for help. Working with housing agencies, banks, insurers, and landlords to ensure rental properties follow lead inspection/testing requirements.	Developing and disseminating educational materials and information about best practices in policy development at the local level.
	Lead hazards in public water supplies identified.	Educating the public.	Tracking and monitoring testing results provided to the Department of Energy, Great Lakes, and Environment (EGLE) by water purveyors.
	Lead hazards in paint, dust, soil, water in schools/daycare identified.	Educating school and daycare administrators on lead hazards and inspection options. Conducting investigations in facilities where clusters of EBLL children have been identified.	Providing educational materials. Collaborating with the Departments of Education and Licensing and Regulatory Affairs to ensure lead education and regulatory compliance.
	Other suspect lead exposure sources for EBLL children are investigated	When investigation of usual lead sources for EBLL children is negative, conducting public health investigation of other potential sources, e.g. contaminated products, parental hobbies, or work.	Providing technical assistance in the investigations. Coordinating investigations that involve multiple LHD jurisdictions.
Lead hazards abated	Homes with paint, dust, soil lead hazards identified get home abated.	Working with families to complete LSHP application. Providing guidance to families not eligible for home abatement assistance from LSHP on other resources. Working with housing agencies, banks, insurers, and landlords to ensure rental properties follow requirements for no lead hazards.	Maintaining the LSHP statewide. Managing funds for home abatements. Overseeing and promoting trained, licensed workforce of contractors. Collaborating with involved federal agencies including EPA and HUD.

	Families in homes with lead hazards are provided with permanent, alternative living or accommodations until hazards are abated.	Educating families about interim/other alternatives to home abatement, e.g. relocation. Ensuring that chelated children have lead-safe home to return to.	Providing financial assistance to families of chelated children for temporary relocation, until child has lead-safe housing to go to.
	Homes in communities with Action Level Exceedances (ALE) of lead in water supply have water filters until lead pipes replaced.	Participating in water filter distribution events in ALE communities. Educating ALE communities about recommendations for safe drinking water.	Educating communities with ALEs. Providing ALE communities with data on blood lead testing and EBLLs. Organizing water filter distribution events. Conducting environmental investigations in ALE communities.
	Products contaminated with lead are taken out of circulation.	Working with regulatory agencies to interdict contaminated products.	Providing technical support to LHDs.
	Local ordinances are in line with Public Health Code and best practices in housing codes.	Working with local authorities to evaluate and revise local ordinances when appropriate.	Ensuring that Public Health Code supports local jurisdiction needs. Providing information on best practices in housing codes.
	Rental properties follow lead requirements; building codes are enforced.	Taking enforcement actions regarding housing codes up to/through prosecution where needed and working with prosecutors to support legal actions.	Providing technical support as needed.
Infrastructure	Legal liability protections for LHD staff re lead are adequate and in line with protections in other areas.	Ensuring that policies and procedures are in line with legal requirements and protections for LHD staff.	Ensuring that legal protections for lead related activities in the Public Health Code and rules are consistent with legal protections for other public health response functions.
	Professional and support staffing are adequate to meet needs of comprehensive program	Having at least one FTE per LHD dedicated to lead. Hiring, contracting out, utilizing regional resources for staffing, including data manager, nurse, community health worker, social worker, epidemiologist,	Providing training. Establishing systems for regionalization of functions as needed.

		paralegal, sanitarian, secretary	
The cost of BLL testing is covered for all children	Performing BLL testing at WIC and in PH clinics for all children at no cost to families.		Promoting procurement of funds for these programs; managing, coordinating, and distributing allocated funds.
Financial systems are in place so that LHDs are reimbursed/can bill for EBLL nurse case management (NCM) for all EBL children.	Having systems in place to bill MDHHS for all EBLL NCM home visits.		
Reimbursement for EBLL NCM from Medicaid is adequate to cover LHD costs.	Billing MDHHS for all EBL nurse case management activities that are eligible for Medicaid reimbursement.		
Reimbursement for EBL NCM for non-Medicaid children is covered.	Providing information to MDHHS to support request for reimbursement from other sources, including private insurers, other safety net programs, grants.		
Reimbursement for case management services not performed by nurses is covered.	Administering the non-nurse EBLL case management program locally.		
Funds are available to support relocation (temporary or permanent) for at-need families with EBLL children.	Administering relocation fund program locally.		
Dedicated lead funding allocated to LHDs allows for flexibility to administer programs based on local needs and priorities.	Allocating funds for programs based on assessment of local needs and priorities. Performing ongoing program evaluation to determine appropriate allocation of resources.		

Appendix 3: Detailed cost breakdown: \$43 million, \$81 million, \$100 million, and MDHHS support

See attached spreadsheet.

References

¹ Centers for Disease Control and Prevention. Low level lead exposure harms children: A renewed call for primary prevention. Report of the Advisory Committee on Childhood Lead Poisoning Prevention, January 2012.

http://www.cdc.gov/nceh/lead/acclpp/final_document_030712.pdf

² Centers for Disease Control and Prevention. Childhood Lead Poisoning. CDC Fact Sheet. April 2013.

https://www.cdc.gov/nceh/lead/factsheets/Lead_fact_sheet.pdf

³ Dignam T, Kaufmann RB, LeSturgeon L, Brown MJ. Control of lead sources in the United States, 1970-2017: Public Health progress and current challenges to eliminating lead exposure. J Pub Health Manag Pract. 2019 25: S13-22.

⁴ https://www.michigan.gov/documents/lead/CLPPP_Definition_of_E BLL_Unrounded_Value_637549_7.pdf

⁵ Wang A, Resania Z, Haugen K, Baerlein L, Yendell S. Screening for elevated blood lead levels: false-positive rates of tests on capillary samples, Minnesota, 2011-2017. J Public Health Manage Practice. 2019. 24:S44-S50.

⁶ Michigan Department of Health and Human Services. Medicaid Provider Manual. Accessed April 2020. Available from: <http://www.mdch.state.mi.us/dch-medicaid/manuals/MedicaidProviderManual.pdf>.

⁷ Michigan WIC Policy. Service Coordination and Outreach: Lead Services. Section 6.04. Accessed April 2020.

Available from: https://www.michigan.gov/documents/mdch/6.04_bloodleadscreening_285797_7.pdf

⁸ https://www.michigan.gov/documents/lead/ProviderQuickReference_Sept2015_501803_7.pdf

⁹ Michigan Child Lead Poisoning Elimination Board, A Roadmap to Eliminating child Lead Exposure. November 2016

https://www.michigan.gov/documents/snyder/CLPEB_Report--Final_542618_7.pdf

¹⁰ MCL 333.20531.

[http://www.legislature.mi.gov/\(S\(z1gu3ry5sewappf35wxmrofz\)\)/mileg.aspx?page=GetObject&objectname=mcl-333-20531](http://www.legislature.mi.gov/(S(z1gu3ry5sewappf35wxmrofz))/mileg.aspx?page=GetObject&objectname=mcl-333-20531)

¹¹ <https://www.michigan.gov/lead/0,5417,7-310-84216---,00.html>

¹² Centers for Disease Control and Prevention. Managing elevated blood lead levels among young children: Recommendations from the advisory committee on childhood lead poisoning prevention. March 2002.

<https://www.cdc.gov/nceh/lead/casemanagement/managingEBLLs.pdf>

¹³ Kemper AR, Uren RL, Hudson S. Childhood lead poisoning prevention activities within Michigan local public health departments. Public Health Rep. 2007 122(1): 88-92

¹⁴ https://www.michigan.gov//documents/mdhhs/CLEEC_Action_Plan_613287_7.pdf

**APPENDIX 3
\$43M DETAIL**

Category	Component	LHD role	LHD cost calculator	LHD cost
BL testing	All children are tested twice before age 3 or, if not tested by age 3, tested at least once by age 6. At risk pregnant women are tested.	Promote testing of all children at age one and two, or by age 6 if not tested previously, which is the recommendation of the Michigan Child Lead Poisoning Elimination Board, including use of "academic detailing" approach and testing assurance by review of testing records . This would include an estimated 230,245 children age one and two, based on U.S. Census American Community Survey. Promote testing of at-risk pregnant/lactating women (At risk defined by CDC and ACOG). Test all children in public health and WIC clinics (estimate 15,000 children). Make point of care testing ("LeadCare II" machine) more available.	Outreach education of providers @ \$20 per provider x 7000 pediatricians, family practice and ob/gyn. \$25 per blood lead test to cover costs of WIC salaries, LeadCare test kit and related expenses . \$6.56 per test for tests done in public health clinics for 15,000 kids. \$2,000 per LeadCare II machine for 10 machines.	\$633,400
	Elevated capillary tests get confirmatory venous	Ensure venous retesting of capillary elevated blood lead level (EBLL) test by follow-up with providers and families, including providing assistance with overcoming barriers to retests. Venous retesting of children with capillary EBLLs in public health/WIC clinics. Calculation for the number of cap EBLLs with universal testing: 3,648 children under age 6 with capillary EBLL and 90 children age 6-17 with capillary EBLLs in 2018 = 3738; expect 60% increase in number of cap EBLL tests with universal testing = 5,981.	\$50 per child with capillary EBLL for outreach, education, transportation assistance and, if needed cost of venous test for those without insurance, for 5,981 capillary tests.	\$299,050
BL data	Data management system for all LHDs has functionality to track children in LHD jurisdiction: EBL NCM, other EBL interventions, chelation, venous retesting, progress of EBL children in lowering BLLs, link to environmental investigation and exposure mitigation.	Data entry and basic data management; use BL testing data to generate data for tracking children.	\$20,000 per LHD for basic IT support plus \$3 per tested child for data management/entry.	\$1,590,735
	Statewide data system is used by LHDs to conduct data analysis and generate reports; communicate summary data results to public, public health and providers.	Data analysis and report writing,	included in FTE count in infrastructure section below	

APPENDIX 3
\$43M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
Services to tested children	Families of every child with a detectable blood lead level are educated about the test results	Provide mailed, telephone, electronic, and/or in-person lead education to family of every child with detectable lead in blood.	Based on MDHHS data showing that 1/3 of all BL tests have a detectable lead level, assume 75,981 (33% of 230,245 children) will have at least one test result a year at detectable levels. \$10 average cost of education for the 75,981 children with detectable lead in blood.	\$759,810
	Every venous confirmed EBL child receives case management from LHD	Provide in-home Elevated Blood Lead Nurse Case Management (EBL-NCM) by a nurse to every child with a venous blood lead level (vEBLL), according to MDHHS protocol, and provide supplemental case management and care coordination by a non-nurse.	Assume EBLL percent remains same as 2018 at 2.9%: 2.9% x 270,322 tested children = 7,839 children with EBLLs. vEBLL percent is 58% of total EBLL = 4547. Assume incident cases are 45% of annual prevalence number = 2046 incident vEBLLs. (1) For EBL -NCM: 2046 x 6 visits x \$202 (Medicaid rate) but assume Medicaid will cover 80% who are Medicaid enrolled = 409 non-Medicaid vEBLL children. (2) Care coordination by non-nurse: 2046 x 4 visits x \$100 per visit.	\$1,314,108
	Children with very high BLLs receive medical treatment including chelation.	Work with families to ensure child receives medical care.	Included in LHD case management costs	
	EBLL services are coordinated with other services (e.g., MIHP, CSHCS, Medicaid Managed Care, mental health)	Provide care coordination services to children with EBLL. Provided by non-nurse professionals.	Included in LHD case management costs	

**APPENDIX 3
\$43M DETAIL**

Category	Component	LHD role	LHD cost calculator	LHD cost
Lead hazards identified	The home/alternate home of every child with confirmed EBLL has a Lead Environmental Inspection (EI)	LHD- trained staff or their contractors do lead EIs. For the 4547 vEBLLs, assume 45% are incident cases = 2046. Assuming state/federally funded agencies will do 1000 EIs, based on MDHHS Healthy Homes Section estimate of current capacity, thus LHDs do remaining 1046 EIs. In addition to the EIs, the LHDs to do follow-up to explain results to all families with EIs.	1046 incident vEBL x 1,500 per home investigation by licensed inspector.\$50 per home for 2046 home EIs for follow-up education.	\$1,671,300
	The public is educated about hazards of lead, including when homes should be tested and where to request the environmental investigation.	Jurisdiction-wide education (e.g. at health fairs, through partner organizations, social media, mass media campaigns).	Jurisdiction-wide education: on average \$50,000 per LHD.	\$2,250,000
	Lead hazards in public water supplies identified.	Educate communities about testing of lead in public water supplies	Included in FTE count in infrastructure section	
	Lead hazards in paint, dust, soil, water in schools/daycare identified.	Provide education as follow-up to schools/daycares where hazards identified	Included in FTE count in infrastructure section	
	Other suspect lead exposure sources for EBL children are investigated	Coordinate the investigation into other sources of lead exposure; may include referral to MIOSHA, obtaining suspect products for testing, on-site inspection of shooting clubs, contacting lead exposed adults to evaluate potential take-home lead.	Costs for other investigations - e.g. inspections at shooting clubs or of homes/cars of workers with EBLs: \$25,000 per LHD	\$1,125,000
Lead hazards abated	Homes with paint, dust, soil lead hazards identified get home abated	Ensure that families know about how to get help to abate the home and provide assistance in completing application for financial assistance.	Included in FTE count in infrastructure section	
	Families in homes with lead hazards are provided with permanent alternative living or until hazards are abated.	Assist in finding lead-safe housing and provide funds to help families with relocation, for families with children with EBLs.	\$5000 per family for estimated 135 children's families with children with BLLs =>15 ug/dL, based on 2018 MDHHS blood lead testing data.	\$675,000
	Homes in communities with Action Level Exceedances (ALE) of lead in water supply have water filters until lead pipes replaced.	Provide public education and participation in water filter distribution events in communities where water hazards have been identified.	Included in FTE count in infrastructure section	
	Products contaminated with lead are taken out of circulation.	Partner with agencies with regulatory authority (e.g., MDARD) to take actions.	Included in FTE count in infrastructure section	
	Local ordinances are in line with Public Health Code and best practices in housing codes.	Advise policy makers	Included in FTE count in infrastructure section	
	Rental properties are in compliance with lead requirements; building codes are enforced.	Advise policy makers and enforce selected building codes.	Included in FTE count in infrastructure section	

**APPENDIX 3
\$43M DETAIL**

Category	Component	LHD role	LHD cost calculator	LHD cost
Infrastructure	Legal liability protections for LHD staff re lead are adequate and in line with protections in other areas.	Maintain professional and support staff to cover all activities (e.g. phone calling, convening partners, providing input into ordinance changes);includes funding for all or part of salaries of e.g., nurses, social workers, community health workers, health educators, phlebotomists epidemiologists, data analysts,sanitarrians, administrative support.	1 FTE per LHD and 135 FTE (average 3 FTE per LHD) including salary and fringe @\$140,000 to be allocated to LHDs as needed, and 30% of salaries and fringe for administrative	\$32,760,000
	Professional and support staffing are adequate to meet needs of comprehensive program			
	The cost of BL testing is covered for all children			
	Financial systems are in place so that LHDs are reimbursed/can bill for EBL NCM for all EBL children			
	Reimbursement for EBL NCM from Medicaid is adquate to cover LHD costs.			
	Reimbursement for EBL NCM for non-Medicaid children is covered by other programs			
	Reimbursement for case management services not performed by nurses is also covered.			
	Funds are available to support relocation (temporary or permanent) for at-need families.			
	Key partnerships are institutionalized.			
Dedicated lead funding allocated to LHDs allows for enough flexibility to administer programs based on local needs and priorities.				
Total				\$43,078,403

APPENDIX 3
\$81M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
BL testing	All children are tested twice before age 3 or, if not tested by age 3, tested at least once by age 6. At risk pregnant women are tested.	Promote testing of all children at age one and two, or by age 6 if not tested previously, which is the recommendation of the Michigan Child Lead Poisoning Elimination Board, including use of "academic detailing" approach and testing assurance by review of testing records . This would include an estimated 230,245 children age one and two, based on U.S. Census American Community Survey. Promote testing of at-risk pregnant/lactating women (At risk defined by CDC and ACOG). Test all children in public health and WIC clinics (estimate 15,000 children). Make point of care testing ("LeadCare II" machine) more available.	Outreach education of providers @ \$20 per provider x 7000 pediatricians, family practice and ob/gyn. \$25 per blood lead test to cover costs of WIC salaries, LeadCare test kit and related expenses . \$6.56 per test for tests done in public health clinics for 15,000 kids. \$2,000 per LeadCare II machine for 200 machines.	\$1,013,400
	Elevated capillary tests get confirmatory venous	Ensure venous retesting of capillary elevated blood lead level (EBLL) test by follow-up with providers and families, including providing assistance with overcoming barriers to retests. Venous retesting of children with capillary EBLLs in public health/WIC clinics. Calculation for the number of cap EBLLs with universal testing: 3,648 children under age 6 with capillary EBLL and 90 children age 6-17 with capillary EBLLs in 2018 = 3738; expect 60% increase in number of cap EBLL tests with universal testing = 5,981.	\$50 per child with capillary EBLL for outreach, education, transportation assistance and, if needed cost of venous test for those without insurance, for 5,981 capillary tests.	\$299,050
BL data	Data management system for all LHDs has functionality to track children in LHD jurisdiction: EBL NCM, other EBL interventions, chelation, venous retesting, progress of EBL children in lowering BLLs, link to environmental investigation and exposure mitigation.	Data entry and basic data management; use BL testing data to generate data for tracking children.	\$20,000 per LHD for basic IT support plus \$3 per tested child for data management/entry.	\$1,590,735
	Statewide data system is used by LHDs to conduct data analysis and generate reports; communicate summary data results to public, public health and providers.	Data analysis and report writing,	included in FTE count in infrastructure section below	

APPENDIX 3
\$81M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
Services to tested children	Families of every child with a detectable lead level are educated about the test results	Provide mailed, telephone, electronic, and/or in-person lead education to family of every child with detectable lead in blood.	Based on MDHHS data showing that 1/3 of all BL tests have a detectable lead level, assume 75,981 (33% of 230,245 children) will have at least one test result a year at detectable levels. \$20 average cost of education for the 75,981 children with detectable lead in blood.	\$1,519,620
	Every venous confirmed EBL child receives case management from LHD	Provide in-home Elevated Blood Lead Nurse Case Management (EBL-NCM) by a nurse to every child with a venous blood lead level (vEBLL), according to MDHHS protocol, and provide supplemental case management and care coordination by a non-nurse.	Assume EBLL percent remains same as 2018 at 2.9%: $2.9\% \times 270,322$ tested children = 7,839 children with EBLLs. vEBLL percent is 58% of total EBLL = 4547. Assume incident cases are 45% of annual prevalence number = 2046 incident vEBLLs. (1) For EBL -NCM: 2046×6 visits \times \$202 (Medicaid rate) but assume Medicaid will cover 80% who are Medicaid enrolled = 409 non-Medicaid vEBL children. (2) Care coordination by non-nurse: 2046×4 visits \times \$100 per visit.	\$1,314,108
	Children with very high BLLs receive medical treatment - chelation.	Work with families to ensure child receives medical care.	Included in LHD case management costs	
	EBL services are coordinated with other services (e.g. MIHP, CSHCS, Medicaid Managed Care, mental health)	Provide care coordination services to children with EBLL. Provided by non-nurse professionals.	Included in LHD case management costs	

APPENDIX 3
\$81M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
Lead hazards identified	The home/alternate home of every child with confirmed EBL has a Lead Environmental Investigation (EI)	LHD- trained staff or their contractors do lead EIs. For the 4547 vEBLLs, assume 45% are incident cases = 2046. Assuming state/federally funded agencies will do 1000 EIs, based on MDHHS Healthy Homes Section estimate of current capacity, thus LHDs do remaining 1046 EIs. In addition to the EIs, the LHDs to do follow-up to explain results to all families with EIs.	1046 incident vEBL x 1,500 per home EIs by licensed inspector. \$50 per home for 2046 home EIs for follow-up education.	\$1,671,300
	The public is educated about hazards of lead, including when homes should be tested and where to request the environmental investigation .	Jurisdiction-wide education (e.g. at health fairs, through partner organizations, social media, mass media campaigns).	Jurisdiction-wide education: on average \$50,000 per LHD.	\$2,250,000
	Lead hazards in public water supplies identified.	Educate communities about testing of lead in public water supplies	Included in FTE count in infrastructure section	
	Lead hazards in paint, dust, soil, water in schools/daycare identified.	Provide education as follow-up to schools/daycares where hazards identified	Included in FTE count in infrastructure section	
	Other suspect lead exposure sources for EBL children are investigated	Coordinate the investigation into other sources of lead exposure; may include referral to MIOSHA, obtaining suspect products for testing, on-site inspection of shooting clubs, contacting lead exposed adults to evaluate potential take-home lead.	Costs for other investigations - e.g. inspections at shooting clubs or of homes/cars of workers with EBLLs: \$100,000 per LHD	\$4,500,000
Lead hazards abated	Homes with paint, dust, soil lead hazards identified get home abated	Ensure that families know about how to get help to abate the home and provide assistance in completing application for financial assistance.	Included in FTE count in infrastructure section	
	Families in homes with lead hazards are provided with permanent alternative living or until hazards are abated.	Assist in finding lead-safe housing and provide funds to help families with relocation, for families with children with EBLLs.	\$5000 per family for estimated 135 children's families with children with BLLs =>15 ug/dL, based on 2018 MDHHS blood lead testing data.	\$675,000
	Homes in communities with Action Level Exceedances (ALE) of lead in water supply have water filters until lead pipes replaced.	Provide public education and participation in water filter distribution events in communities where water hazards have been identified.	Included in FTE count in infrastructure section	
	Products contaminated with lead are taken out of circulation.	Partner with agencies with regulatory authority (e.g., MDARD) to take actions.	Included in FTE count in infrastructure section	

**APPENDIX 3
\$81M DETAIL**

Category	Component	LHD role	LHD cost calculator	LHD cost
	Local ordinances are in line with Public Health Code and best practices in housing codes.	Advise policy makers	Included in FTE count in infrastructure section	
	Rental properties are in compliance with lead requirements; building codes are enforced.	Advise policy makers and enforce selected building codes.	Included in FTE count in infrastructure section	
Infrastructure	<p>Legal liability protections for LHD staff re lead are adequate and in line with protections in other areas.</p> <p>Professional and support staffing are adequate to meet needs of comprehensive program</p> <p>The cost of BL testing is covered for all children</p> <p>Financial systems are in place so that LHDs are reimbursed/can bill for EBL NCM for all EBL children</p> <p>Reimbursement for EBL NCM from Medicaid is adequate to cover LHD costs.</p> <p>Reimbursement for EBL NCM for non-Medicaid children is covered by other programs</p> <p>Reimbursement for case management services not performed by nurses is also covered.</p> <p>Funds are available to support relocation (temporary or permanent) for at-need families.</p> <p>Key partnerships are institutionalized.</p> <p>Dedicated lead funding allocated to LHDs allows for enough flexibility to administer programs based on local needs and priorities.</p>	Maintain professional and support staff to cover all activities (e.g. phone calling, convening partners, providing input into ordinance changes);includes funding for all or part of salaries of e.g., nurses, social workers, community health workers, health educators, phlebotomists epidemiologists, data analysts, sanitarians, administrative support.	4 FTEs per LHD plus additional 180 FTEs to be allocated to LHDs as needed. FTE including salary and fringe @\$140,000; 30% of salaries and fringe for administrative. \$2000 per FTE for computer and related IT support.	\$66,240,000
Total				\$81,073,213

APPENDIX 3
\$100M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
BL testing	All children are tested twice before age 3 or, if not tested by age 3, tested at least once by age 6. At risk pregnant women are tested.	Promote testing of all children at age one and two, or by age 6 if not tested previously, which is the recommendation of the Michigan Child Lead Poisoning Elimination Board, including use of "academic detailing" approach and testing assurance by review of testing records . This would include an estimated 230,245 children age one and two, based on U.S. Census American Community Survey. Promote testing of at-risk pregnant/lactating women (At risk defined by CDC and ACOG). Test all children in public health and WIC clinics (estimate 15,000 children). Make point of care testing ("LeadCare II" machine) more available.	Outreach education of providers @ \$20 per provider x 7000 pediatricians, family practice and ob/gyn. \$25 per blood lead test to cover costs of WIC salaries, LeadCare test kit and related expenses . \$6.56 per test for tests done in public health clinics for 15,000 kids. \$2,000 per LeadCare II machine for 400 machines.	\$1,623,400
	Elevated capillary tests get confirmatory venous	Ensure venous retesting of capillary elevated blood lead level (EBLL) test by follow-up with providers and families, including providing assistance with overcoming barriers to retests. Venous retesting of children with capillary EBLLs in public health/WIC clinics. Calculation for the number of cap EBLLs with universal testing: 3,648 children under age 6 with capillary EBLL and 90 children age 6-17 with capillary EBLLs in 2018 = 3738; expect 60% increase in number of cap EBLL tests with universal testing = 5,981.	\$50 per child with capillary EBLL for outreach, education, transportation assistance and, if needed cost of venous test for those without insurance, for 5,981 capillary tests.	\$299,050
BL data	Data management system for all LHDs has functionality to track children in LHD jurisdiction: EBL NCM, other EBL interventions, chelation, venous retesting, progress of EBL children in lowering BLLs, link to environmental investigation and exposure mitigation.	Data entry and basic data management; use BL testing data to generate data for tracking children.	\$50,000 per LHD for basic IT support plus \$3 per tested child for data management/entry.	\$2,940,735

**APPENDIX 3
\$100M DETAIL**

Category	Component	LHD role	LHD cost calculator	LHD cost
	Statewide data system is used by LHDs to conduct data analysis and generate reports; communicate summary data results to public, public health and providers.	Data analysis and report writing,	included in FTE count in infrastructure section below	
Services to tested children	Families of every child with a detectable lead level are educated about the test results	Provide mailed, telephone, electronic, and/or in-person lead education to family of every child with detectable lead in blood.	Based on MDHHS data showing that 1/3 of all BL tests have a detectable lead level, assume 75,981 (33% of 230,245 children) will have at least one test result a year at detectable levels. \$20 average cost of education for the 75,981 children with detectable lead in blood.	\$1,519,620
	Every venous confirmed EBL child receives case management from LHD	Provide in-home Elevated Blood Lead Nurse Case Management (EBL-NCM) by a nurse to every child with a venous blood lead level (vEBLL), according to MDHHS protocol, and provide supplemental case management and care coordination by a non-nurse.	Assume EBLL percent remains same as 2018 at 2.9%: 2.9% x 270,322 tested children =7,839 children with EBLLs. vEBLL percent is 58% of total EBLL =4547. Assume incident cases are 45% of annual prevalence number = 2046 incident vEBLLs. (1) For EBL -NCM: 2046 x 6 visits x \$202 (Medicaid rate) but assume Medicaid will cover 60% who are Medicaid enrolled = 818 non-Medicaid vEBL children. (2) Care coordination by non-nurse: 2046 x 4 visits x \$100 per visit.	\$1,809,816
	Children with very high BLLs receive medical treatment - chelation.	Work with families to ensure child receives medical care.	Included in LHD case management costs	

APPENDIX 3
\$100M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
	EBL services are coordinated with other services (e.g. MIHP, CSHCS, Medicaid Managed Care, mental health)	Provide care coordination services to children with EBLL. Provided by non-nurse professionals.	Included in LHD case management costs	
Lead hazards identified	The home/alternate home of every child with confirmed EBL has a Lead Environmental Investigation (EI).	LHD- trained staff or their contractors do lead EIs. For the 4547 vEBLLs, assume 45% are incident cases = 2046. Assuming state/federally funded agencies will do 1000 EIs, based on MDHHS Healthy Homes Section estimate of current capacity, thus LHDs do remaining 1046 EIs. In addition to the EIs, the LHDs to do follow-up to explain results to all families with EIs.	1046 incident vEBL x 2,000 per home EI by licensed inspector.\$50 per home for 2046 home EIs for follow-up education.	\$2,194,300
	The public is educated about hazards of lead, including when homes should be tested and where to request the environmental investigation .	Jurisdiction-wide education (e.g. at health fairs, through partner organizations, social media, mass media campaigns).	Jurisdiction-wide education: on average \$100,000 per LHD.	\$4,500,000
	Lead hazards in public water supplies identified.	Educate communities about testing of lead in public water supplies	Included in FTE count in infrastructure section	
	Lead hazards in paint, dust, soil, water in schools/daycare identified.	Provide education as follow-up to schools/daycares where hazards identified	Included in FTE count in infrastructure section	
	Other suspect lead exposure sources for EBL children are investigated	Coordinate the investigation into other sources of lead exposure; may include referral to MIOSHA, obtaining suspect products for testing, on-site inspection of shooting clubs, contacting lead exposed adults to evaluate potential take-home lead.	Costs for other investigations - e.g. inspections at shooting clubs or of homes/cars of workers with EBLLs: \$100,000 per LHD	\$4,500,000
Lead hazards	Homes with paint, dust, soil lead hazards identified get home abated	Ensure that families know about how to get help to abate the home and provide assistance in completing application for financial assistance.	Included in FTE count in infrastructure section	
	Families in homes with lead hazards are provided with permanent alternative living or until hazards are abated.	Assist in finding lead-safe housing and provide funds to help families with relocation, for families with children with EBLLs.	\$5000 per family for estimated 300 children's families with children with BLLs =>15 ug/dL, based on 2018 MDHHS blood lead testing data.	\$1,500,000

APPENDIX 3
\$100M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
abated	Homes in communities with Action Level Exceedances (ALE) of lead in water supply have water filters until lead pipes replaced.	Provide public education and participation in water filter distribution events in communities where water hazards have been identified.	Included in FTE count in infrastructure section	
	Products contaminated with lead are taken out of circulation.	Partner with agencies with regulatory authority (e.g., MDARD) to take actions.	Included in FTE count in infrastructure section	
	Local ordinances are in line with Public Health Code and best practices in housing codes.	Advise policy makers	Included in FTE count in infrastructure section	
	Rental properties are in compliance with lead requirements; building codes are enforced.	Advise policy makers and enforce selected building codes.	Included in FTE count in infrastructure section	
Infrastructure	Legal liability protections for LHD staff re lead are adequate and in line with protections in other areas.	Maintain professional and support staff to cover all activities (e.g. phone calling, convening partners, providing input into ordinance changes);includes funding for all or part of salaries of e.g., nurses, social workers, community health workers, health educators, phlebotomists epidemiologists, data analysts, sanitarians, administrative support.	4 FTEs per LHD plus additional 250 FTEs to be allocated to LHDs as needed. FTE including salary and fringe@\$140,000; 30% of salaries and fringe for administrative. \$2000 per FTE for computer and related IT support.	\$78,850,000
	Professional and support staffing are adequate to meet needs of comprehensive program			
	The cost of BL testing is covered for all children			
	Financial systems are in place so that LHDs are reimbursed/can bill for EBL NCM for all EBL children			
	Reimbursement for EBL NCM from Medicaid is adequate to cover LHD costs.			
	Reimbursement for EBL NCM for non-Medicaid children is covered by other programs			
	Reimbursement for case management services not performed by nurses is also covered.			
	Funds are available to support relocation (temporary or permanent) for at-need families.			
	Key partnerships are institutionalized.			
Dedicated lead funding allocated to LHDs allows for enough flexibility to administer programs based on local needs and priorities.				

APPENDIX 3
\$100M DETAIL

Category	Component	LHD role	LHD cost calculator	LHD cost
Total				\$99,736,921

**APPENDIX 3
MDHHS DETAIL**

FTE new positions	Salary	Fringe	Total
Public Health Consultant-11 (Health Educator)	\$ 76,086	\$ 58,587	134,673
Departmental Specialist-2	\$ 80,870	\$ 62,270	143,141
Epi-A	\$ 81,494	\$ 62,751	144,245
Departmental Tech-10 (4)	\$ 227,968	\$ 175,535	403,503
Unit Manager	\$ 89,024	\$ 68,548	157,572
Nurse Consultant-A	\$ 83,678	\$ 64,432	148,111
Departmental Analyst- 12	\$ 74,027	\$ 57,001	131,028
Departmental Analyst-11 (4)	\$ 274,144	\$ 211,091	485,235
Lab Scientist-11 (2)	\$ 142,730	\$ 109,902	252,631
Total salary and fringe	\$ 1,130,022	\$ 870,117	2,000,140
Indirect (17% salary and fringe)			379,627
Printing			200,000
IT - replacing HHL PSS database (2,000,000); annual server costs 200,000			2,200,000
Lab equipment: Perkin Elmer DBS Puncher - \$30,000, ICP-OES - \$130,000			160,000
Lab - environmental media			120,000
Lab costs for blood lead			250,000
Contract - program evaluation			2,000,000
Total			7,309,766