

A Proposed Evaluation Of Lead Educational Materials For Pregnant Women In Allegheny
County

by

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University of Pittsburgh, 2019

Abstract

Lead exposure affects millions of children and families. Children and pregnant women are at higher risk for lead exposure due to the negative impact lead has on child and fetus development. There is no safe level of lead exposure and even small amounts of exposure to children can lead to developmental delays and behavioral issues in adolescence and adulthood. Lead exposure can occur through multiple pathways, but exposure to lead dust from lead paint in older homes is the most common form of exposure for children. Allegheny County, Pennsylvania, holds a high burden of lead due to the profoundly old infrastructure and industrial history. Due to this environment, children and pregnant women are at a constant risk for being exposed to lead. The Allegheny County Health Department mobilized a campaign to improve childhood blood lead level screening and provide education and resources for families. Included in this effort, was creating and disseminating education materials targeted to pregnant women and families. While the importance of evaluating health communication is widely known, it is often not prioritized, and evaluations are not commonly conducted. The proposed evaluation can identify if the print materials contributed to individual changes in lead-safe behaviors and overall improved knowledge and awareness of lead exposure. The public health significance of this paper is that it will contribute to limited information available on conducting proper and useful evaluations of health communication. Ultimately, this information can be used to improve public health education efforts and improve the reach of public health education.

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Preface

I want to take this moment to acknowledge the individuals who shaped my experience at Pitt and this essay. First of all, thank you to Dr. Felter for being my Essay Advisor and supporting me throughout this process. Also, thank you to Dr. Weinstein for being the additional reader and providing insightful and encouraging feedback throughout this process. I owe a special thank you to Megan Tulikangas for being a reader and for providing the opportunity to work at the Health Department. Without my experience with Megan and the Pittsburgh Summer Institute, this essay would not exist. I would also like to thank Liz Winter who also worked on this project as a summer intern. We shared this project and much of the work was done collaboratively and together, making the experience even more enjoyable. I owe many thanks to Chris Letzelter, the graphic designer for the Allegheny County Health Department, for creating engaging and appropriate graphics and making our visions come to life. Lastly, I want to thank my fellow peers in the Graduate School of Public Health for being a constant supply of support and encouragement over the past two years.

1.0 Introduction

Exposure to lead can be detrimental to children's health and there is no identified safe level exposure. Over the last several decades, the United States has taken many steps to reduce the sources of lead exposure in our environment, however, exposure still occurs from sources both inside and outside of the home. While lead is a national issue and concern, it is specifically a priority in Allegheny County due to the amount of older homes and aging infrastructure. The Allegheny County Health Department (ACHD) has made great strides in addressing this issue through their Get Ahead of Lead Campaign. One of the primary focuses of this campaign is to educate the public on the risks of lead exposure and what can be done to mitigate and minimize risk among all vulnerable populations. Initial efforts were focused primarily on informing the public about universal screening requirements and preventing childhood exposure through education of parents and health care providers, with further expansion to include education and communication with pregnant women and their health care providers.

. Children and pregnant women are at particularly higher risk for lead exposure due to the negative impact lead has on child and fetus development. There is no safe level of lead exposure and even small amounts of exposure to children can lead to developmental delays and behavioral issues in adolescence and adulthood¹. Efforts to specifically address lead exposure during and after pregnancy were initiated and materials were created during the summer of 2018 as an internship opportunity offered through the Allegheny County Health Department (ACHD). To do this, a literature search was undertaken to identify interventions deployed by health departments in similarly-sized cities. Additionally, key stakeholders within the county were involved in designing and framing the program materials. Ultimately, the approved materials were then disseminated

throughout the county and continue to be used to communicate the risk of lead exposure during pregnancy and child development. While a full evaluation of the health communication efforts is considered best practice, this was not achievable within the scope of the practicum. Therefore, a proposed evaluation will be outlined following the description of the program.

The purpose of this paper is to propose an evaluation for a local health departments effort to communicate lead risks, exposures and available resources among pregnant women and their health care providers. The proposed evaluation will include different measures of success to be evaluated based on the actual dissemination of the print materials throughout the county and the use of these materials. While can be challenging to conduct an evaluation of a county-wide effort, it is important to get input to improve further health communication efforts within the health department. The proposed evaluation will show the reach of the printed materials by measuring specific process measures including how many print materials were disseminated and where they were disseminated. Moreover, the proposed evaluation will answer if the print materials contributed to individual changes in lead-safe behaviors and overall improved knowledge and awareness of lead exposure.

2.0 Background

2.1 Lead risks and exposures

Lead is commonly known as a neurotoxin and heavy metal and exposure to lead can cause disruption and delays in development. Children and fetuses are impacted the most by lead exposure due to their increased vulnerability during development. This is especially apparent for children under the age of six because their bodies are forming critical neurological connections and lead can disrupt this process. According to the Centers for Disease Control and Prevention (CDC), at least 4 million households have children living in them that are being exposed to high levels of lead¹. Additionally, there are approximately half a million U.S. children ages 1-5 with blood lead levels above 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$), the reference level at which CDC recommends public health actions be initiated¹. Likewise, the CDC has indicated that no safe blood lead level in children has been identified and high levels of exposure can cause symptoms, given its effect on the brain and central nervous system, including coma, seizures and even death¹. Even low levels of lead in blood have been shown to affect Intelligence Quotient (IQ), ability to pay attention, academic achievement, and criminal behavior and the deleterious health effects of lead exposure are irreversible². The most common forms of lead exposure include, paint, water, soil, some toys, jewelry and other consumer products manufactured overseas³.

Lead-based paint and lead contaminated dust occurring inside or around the home are the most hazardous sources of lead for U.S. children³. Moreover, all houses built before 1978 are likely to contain some lead-based paint since lead-based paints were banned for use in housing in 1978. However, over time, the paint begins to deteriorate, and this becomes the biggest source of

exposure. According to the CDC, approximately 24 million housing units in the United States have deteriorated leaded paint and elevated levels of lead-contaminated house dust⁴. The exact number of these housing units in Allegheny County is unknown, but the age and date of the construction of the home can be indicative of the presence of lead. This becomes specifically harmful when children begin crawling and putting their hands and other objects in their mouths. By exhibiting hand-to-mouth behaviors, touching surfaces and/or objects and then placing their fingers in the mouths, young children in environments with lead present are at higher risk for ingesting lead. Because lead absorption affects cognitive development, children less than six years of age are at the highest risk for permanent changes in their brain's growth⁵. Children under six years of age are both at the highest risk for absorbing lead from their environment and most susceptible to the long-term harm caused by lead absorption⁵.

2.1.1 Lead Exposure During Pregnancy

Although lead exposure remains an important potential risk to children, the potential risks to developing fetuses are just as critical. According to the CDC, lead can easily be passed from the mother to the unborn child through the placenta⁶. More importantly, exposure to lead during pregnancy can put a woman at risk for miscarriage, cause the baby to be born too early or too small, damage the baby's brain, kidneys, and nervous system, and cause the child to have learning or behavior problems⁶. Additionally, the American College of Obstetrics and Gynecology states that maternal lead exposure during pregnancy is inversely related to fetal growth, meaning that higher levels of maternal lead exposure correlate with lower birth weights⁷. Likewise, lead

exposure has been associated with an increased risk of gestational hypertension and a large number of studies provide evidence that prenatal lead exposure impairs children's neurodevelopment⁶.

As mentioned in the section above, children are most likely to be exposed through direct ingestion of lead in the dust and soil. However, adults are more likely to be exposed to lead through inhalation. Important risk factors for lead exposure in pregnant women include recent immigration, pica practices, occupational exposure, nutritional status, mobilization of endogenous lead, culturally-specific practices such as the use of traditional remedies or imported cosmetics, and the use of traditional lead-glazed pottery for cooking and storing food⁸. Additionally, bone lead stores are mobilized during periods of increased bone turnover such as pregnancy and lactation. This means that women and their infants may be at risk for continued exposure long after initial exposure to external environmental sources has been terminated⁸. The CDC has not identified an allowable exposure level, level of concern, or any other marker intended to identify a safe or unsafe level of exposure for either mother or fetus⁸. Because of this, it is critical to educate and inform expectant mothers and families of the potential risks of lead exposure.

2.2 Social-Ecological Contributors and Lead Exposure

One key aspect of public health is understanding that there are many different contributing factors across varying social and ecological levels that contribute to health issues. Overall, it is commonly found that children and families who are classified as having a low-socioeconomic status are often at higher risk for health issues including chronic diseases, obesity, environmental exposure and many other public health issues. Socioeconomic status is commonly classified by education attainment and family income⁹. More specifically, low socioeconomic status is often an

indicator of increased risk of exposure to environmental contaminants, including lead⁹. In one study, it was found that the risk of high blood lead levels was significantly higher in the communities that were identified as being low-income and socioeconomically disadvantaged⁹. There are many reasons for this correlation, including the quality and age of the housing that families of low socioeconomic status are predominantly living in. Children are most commonly exposed to lead through deteriorating lead paint that is found in house dust and soil, and this exposure risk is exacerbated in older and unkept houses¹⁰. Ultimately, the burden of poor and aging housing is placed on low-income families.

Not only is lead dust and lead contaminated soil a concern in older housing, but there are also environmental exposure of lead outside of the home that can be exacerbated by socioeconomic status. For example, public school buildings in low-income neighborhoods have not been updated in decades and house incredible potential for lead exposure. More importantly, lead is the most prevalent toxicant in U.S. school drinking water, however many schools are not testing their water and are not addressing the potential lead exposure¹¹. Federal regulations only require voluntary testing and remediation of lead and many low-income schools do not have the funding and personnel to test and remediate the lead in their schools¹¹. This is a perfect example of the environmental and policy level action that is needed to eliminate childhood lead exposure, especially in the public-school system.

In addition to the correlation of individual low socioeconomic status to higher risk of lead exposure, childhood lead poisoning has been shown to be influenced by neighborhood socioeconomic characteristics and race¹². This is seen because the primary sources of lead have historically been seen predominantly in low-income and urban neighborhoods and communities¹². A specific study done in the Detroit area depicts this disparity by doing an analysis of their reported

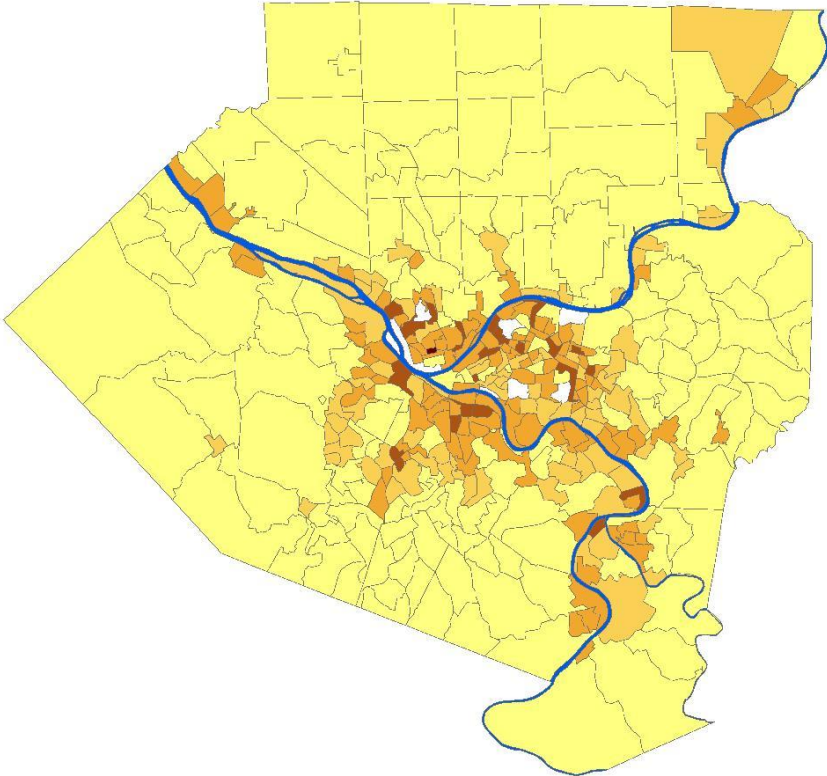
elevated blood lead levels and finding that black children had a higher mean elevated blood lead level compared to white children residing in a similar community¹². Overall, the primary goal of identifying the social-ecological factors that contribute to lead exposure is to highlight that many expectant mothers and families are not intentionally exposing their children to lead and minimizing exposure may be beyond their control. This is an issue, like many other public health issues, that is exacerbated by race, socioeconomic status, community environment, and policies.

2.3 Lead in Allegheny County

While lead is a national issue and concern, it is specifically a priority in Allegheny County, Pennsylvania. In 1978, federal legislation removed lead from all residential paint, which protected new construction and renovation projects, but did not require removal of existing lead paint found in many homes and businesses¹⁴. Additionally, prior to 1950, lead based paint was the most common and preferred paint used in homes and these homes house the highest burden of lead paint. Overall, more than 80% of the Allegheny County homes were built before 1978 and 40% of homes were built before 1950¹³. Figures 1 and Figure 2 depict the distribution of the older homes throughout the county and were created by the Allegheny County Health Department and are publicly available on their website¹⁵. Many older homes contain paint that is in poor condition and I'd just provide a citation to the ACHD website or wherever you got the maps as the paint peels and cracks, lead dust can be created and fall onto the floor. Likewise, lead paint was commonly used around windows, doors, stairs, and on floors and areas that rub, hit, or are walked on can create lead dust¹⁶. Because of the overwhelming amount of aging infrastructure in Allegheny






County, exposure through lead paint and lead dust is a primary source of lead exposure for both children and adults.

Allegheny County Census Tracts: Housing Built Before 1950



Legend

Proportion of Houses Built Before 1950

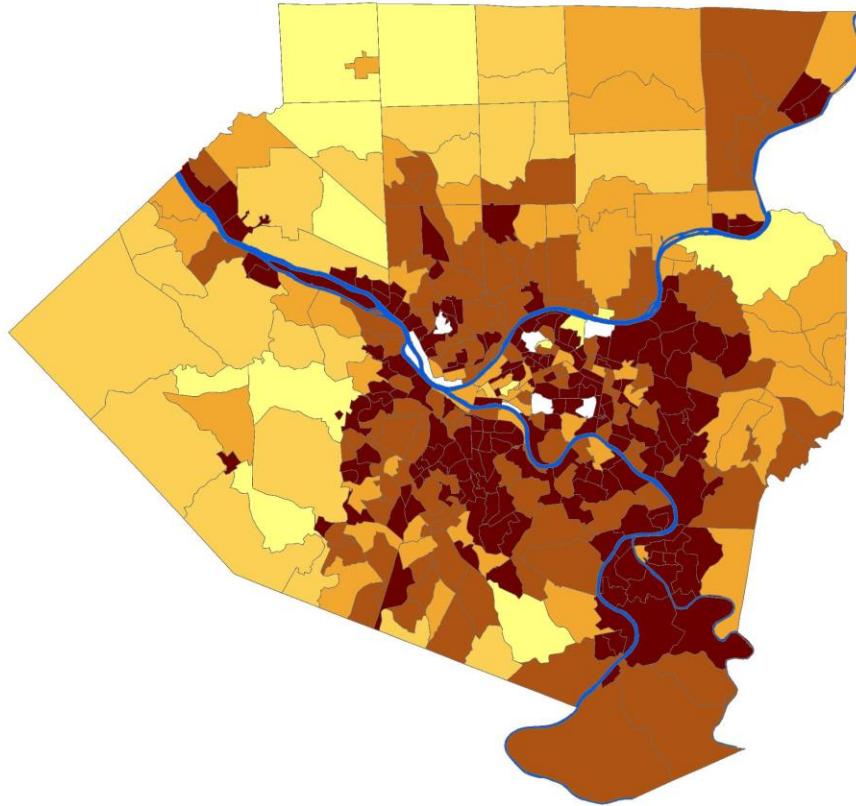
	< 40%
	40% - 59%
	60% - 79%
	80% - 90%
	> 90%



Generated by Allegheny County Health Department






Figure 1 Houses built before 1950 by census tract

Allegheny County Census Tracts: Housing Built Before 1980



Legend

Proportion of Houses Built Before 1980

-  < 40%
-  40% - 59%
-  60% - 79%
-  80% - 89%
-  > 90%



Generated by Allegheny County Health Department

Figure 2 Houses built before 1980 by census tract

Additionally, lead can also be found in water when it is transferred from the water treatment facilities to homes through older pipes that contain lead or when it travels within the home through plumbing fixtures that contain lead^{16,17}. While lead in water is a concern throughout the world, it is particularly worrisome in Allegheny County because there are 35 community public water systems that are responsible for the drinking water but many of these providers do not know exactly how many lead service lines are still in place¹⁶. Furthermore, even if water authorities are aware of the locations of all lead pipes within their service areas, full lead line replacements are costly, and they may be unable to replace the full length of a service line without the customer's consent. However, the municipal water authority for the city of Pittsburgh (PWSA) has violated the thresholds set forth by the EPA for lead levels in water and have undertaken a city-wide initiative to replace their lead lines¹⁸. This effort prioritizes the areas of the city that are at highest risk of lead exposure and these communities hold the higher burden of aging homes and are socio-economically disadvantaged.

In addition to water issues identified above, soil is also another form of lead exposure that is prominent in Allegheny County. During the early 1800's, there was a significant industrial presence where smelters and other facilities produced airborne lead emissions as a byproduct of manufacturing processes¹⁶. Allegheny County has unique physical characteristics and a rather hilly topography meaning the emissions settled in greater concentrations in low-lying valleys, rather than being disbursed more evenly among a flat areas¹⁶. Also, workers exposed to lead in their workplace, like the industrial facilities, can carry lead dust home on their clothes and on themselves, which poses additional exposure to lead in homes. Similarly, lead can also enter the soil from a variety of sources including ammunition at shooting ranges and the demolition of pre-1978 buildings that contain lead paint¹⁶. Ultimately, Allegheny County's industrial history, old

and aging infrastructure, and water systems continues to create an environment where lead exposure is a constant concern.

2.4 Get Ahead of Lead

With a predominant amount of homes and buildings being constructed before 1978 and with a history of industrial emissions, lead has been a point of concern in Allegheny County. There have been many national and local efforts to reduce lead exposure and these efforts have led to a dramatic decline in childhood lead exposure. The decline in Allegheny County and the City of Pittsburgh can be seen in Figure 3¹⁵. Due to the lack and quality of reporting elevated blood lead levels, there is not much data available prior to 2009, however, there is an apparent decline in the rates of elevated blood lead levels over the past decade.

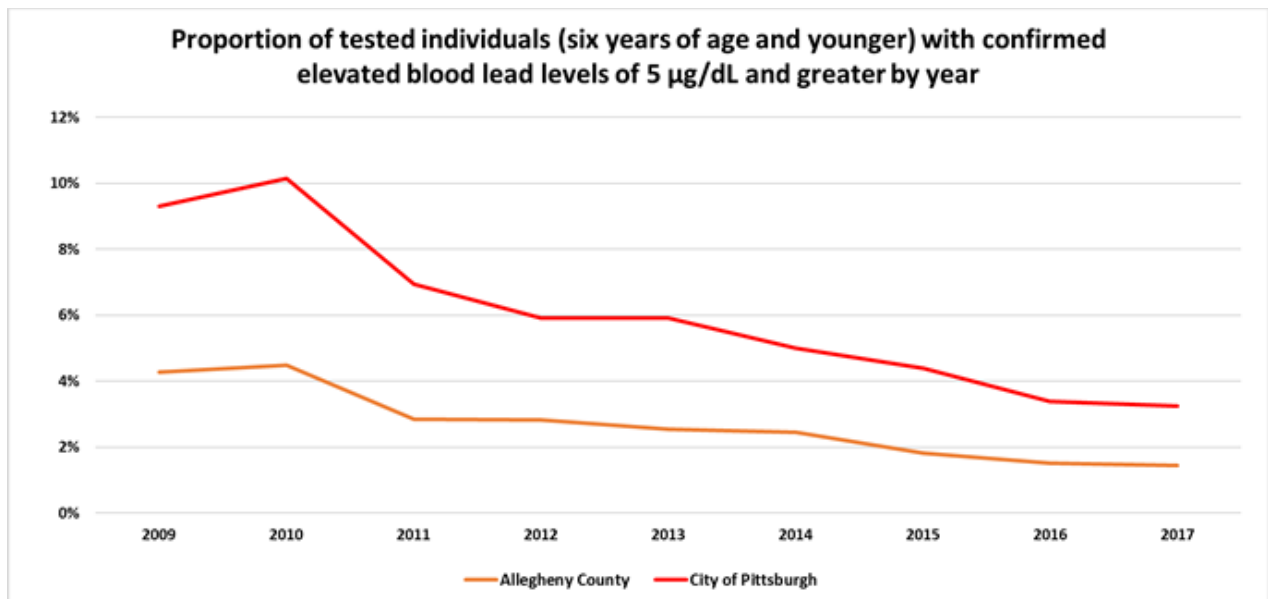


Figure 3 Trend in Rates of Confirmed Elevated Blood Levels

The ACHD has implemented many program and policy interventions throughout the past four decades that have contributed to the decline of elevated blood levels in Allegheny County. As of January of 2017, a new universal testing regulation went into action requiring universal lead screening for all children residing in Allegheny County at 9-12 months and again at 24 months. Likewise, the Housing Program has a full-time lead inspector position, which will significantly increase the program's ability to investigate sources of lead in homes where children with elevated blood levels reside. There are also additional programs within the county that provide resources to minimize lead exposure in the home, including the Safe and Healthy Homes Program and the Allegheny Lead Safe Homes Program.

To further the efforts of the ACHD to prevent and minimize lead exposure, the ACHD was awarded a grant specific to improving their lead prevention, surveillance and prevention strategies. The county-wide effort to inform the community about universal testing for children and lead exposure was labelled and branded as Get Ahead of Lead. With the Get Ahead of Lead grant, the ACHD planned to expand educational resources needed to alert clinicians, families and landlords as to the hazards of lead as well as the resources available and expand blood level testing for all children in the County.

First, this grant was being used to develop new materials to meet the needs of many audiences including providers in pediatrics, Family Medicine and Ob/Gyn practices as well as families and landlords. These providers are critical to reducing lead exposure and to implementing the appropriate steps to react appropriately to a child with an elevated blood lead level and ultimately prevent lead poisoning. Moreover, these materials were created primarily to inform families and providers of the universal testing regulation that was implemented. Additionally, the materials were translated and available in a variety of languages, including Spanish, Arabic and

Nepali. Likewise, the ACHD needed to develop educational materials to alert healthcare provider and families about the universal testing requirement that had recently been approved and about the resources available within the county.

The second goal of this grant was to expand the availability of blood lead testing, particularly for the most vulnerable members of Allegheny County. While individuals with insurance can generally access blood level testing at their primary care providers offices, those without insurance may be particularly vulnerable and unlikely to get their tests. Thus, the intent of this grant is to provide blood lead testing free of charge at ACHD's immunization clinic and WIC clinics. Additionally, this will help all Allegheny County children meet the new lead testing requirement. This piece was crucial to ensuring that families and children had the resources and means to meet the new requirements and regulations.

ACHD had identified several communities throughout the County as having a higher risk of lead exposure based on the following risk factors: proportion of individuals under 5 years of age, aggregated (2012-2016) proportion of individuals tested for lead with a confirmed elevated blood lead level ≥ 5 ug/dL, proportion of houses built prior to 1950, high school education rate, and percent poverty rate. The listed communities were identified as priority areas and can also be seen in Figure 4¹⁵;

- Mon Valley municipalities: Clairton, Duquesne, Glassport, McKeesport, West Mifflin, East Pittsburgh, North Braddock, Rankin, Wilmerding
- Mt. Oliver and City of Pittsburgh neighborhoods (South): Glen Hazel, Hazelwood, Arlington, Arlington Heights, Beechview, Beltzhoover, Bon Air, Carrick, Knoxville, Mount Washington

- Borough of Wilkinsburg and Pittsburgh's East End neighborhoods: East Hills, Larimer, Lincoln-Lemington-Belmar, Homewood.
- Pittsburgh's Northside neighborhoods: Brighton Heights, California-Kirkbride, Central Northside, Fineview, Marshall-Shadeland, Northview Heights, Perry South, Spring Garden, Spring Hill-City View
- Stowe Township, McKees Rocks, and Pittsburgh neighborhoods of Esplen and Sheraden.
- Pittsburgh neighborhoods of Garfield and Upper Lawrenceville

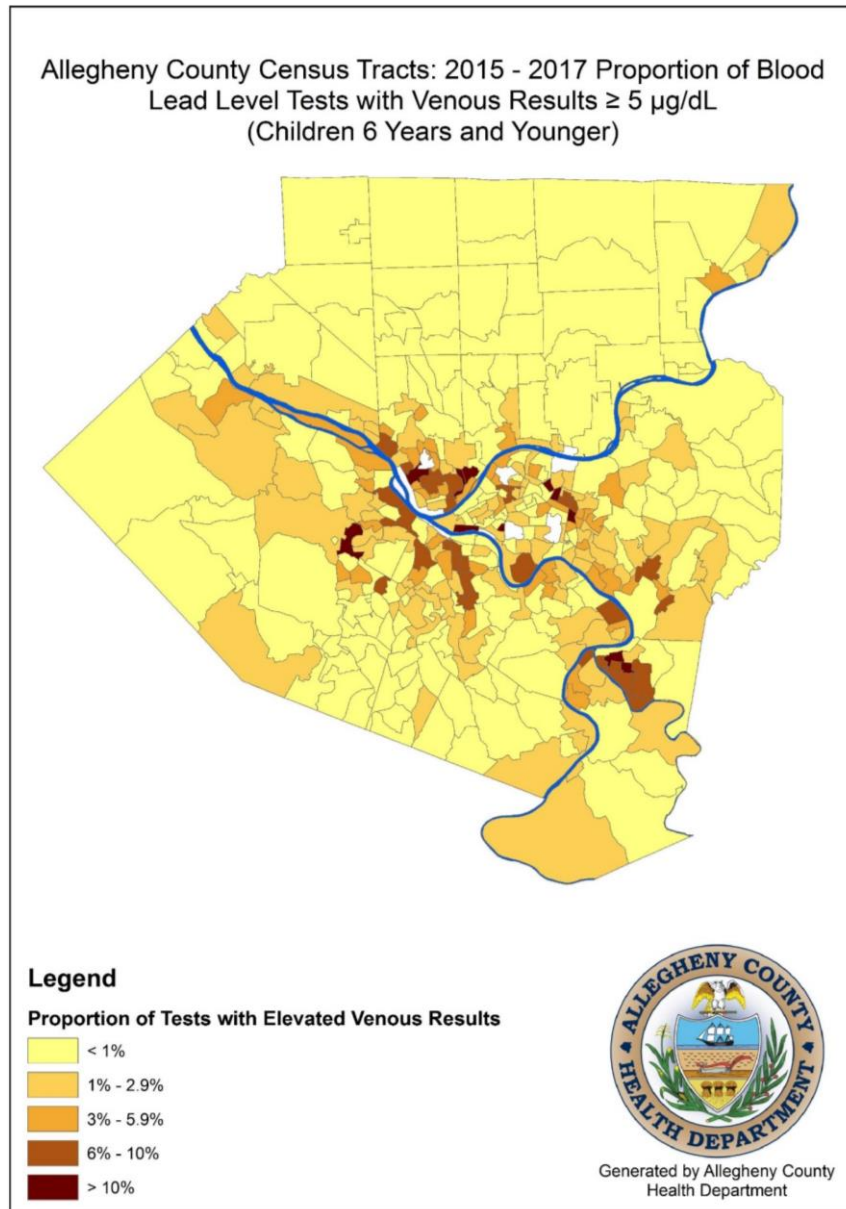


Figure 4 Proportion of Elevated Blood Lead Levels by Census Tract

The initial efforts made toward improving and developing targeted education materials began with print materials tailored to parents and pediatricians. Outreach with community organizations, mailings to pediatricians, and mailings to homes of families with young children were conducted. After the initial efforts focused on universal screening and preventing childhood exposure through education of parents and pediatricians, the campaign was then expanded to include education and communication with pregnant women and their health care providers. This

next step to prioritize outreach and education to pregnant women and their providers was the next step toward primary prevention. If the families can be aware of this risk of lead and where exposure exists in their home, they can minimize risk to the fetus during development and to the developing child living in the home.

Efforts to specifically address lead exposure during and after pregnancy were initiated and materials were created during the summer of 2018 as an internship opportunity offered through the ACHD. This internship opportunity was designed to have three components:

- Identify and compile a list of all current OB/GYN and midwife practices in Allegheny County.
- Work the ACHD graphic designer to develop print education materials targeted to pregnant women and expectant families about lead exposure, risks, policies and resources.
- Conduct mass mailing of all targeted print materials to all identified OB/GYN and midwife practices.

The details of the outlined activities are described in the next section, Print Material Development and Dissemination.

3.0 Print Material Development and Dissemination

3.1 Formative Research

According to the CDC, formative research and evaluation is done when a new program or campaign is created and can help ensure that the program is appropriately and accurately designed before it is implemented¹⁹. When developing materials to adequately and efficiently educate pregnant women about lead, it is crucial to do some formative research to get insight from key stakeholders before, during and after development of the print materials. While the formative research was informal and through multiple avenues, it was extremely valuable and instrumental to creating the final materials.

The first step in creating and developing materials targeted to pregnant women and educating about lead risks and exposures was to see what other health departments and health agencies were doing to frame this message. A literature search was done to inform program development. Local health department and governing health agencies, like the CDC, often do not publish their information in scientific articles because their information should be easily accessible and publicly available. Because of this, Google was the primary search engine for the informal literature search. Many of the key words used in the searches were “lead education for pregnant women,” “information about prenatal lead exposure,” and “local health department lead education for pregnant women.” Additionally, there are a few agencies and organizations that are the reputable sources of information for this topic, including the CDC and the American College of Obstetrics and Gynecology, so the information on those sites was prioritized.

Initial searches were to identify what materials the CDC had available for pregnant women. Because local health departments rely on the CDC to provide up-to-date and reliable scientific information, it was crucial to find out what materials and information were already available. Then, subsequent searches were geared toward health departments and organizations that have an active approach to address lead. This search generated information created by Illinois Department of Public Health and their Lead Safe Illinois program, Minnesota Department of Health, New York City Health Department, and Missouri Department of Health. Based on the preliminary searches of what print materials were available online, it was apparent that much of the language used was directly from the CDC. Based on this, it was clear some rewording and reframing of the message would be necessary to make the printed materials easily-readable and action-oriented. Examples of print materials from the listed health departments and agencies are included in the Appendix.

Meetings were then arranged with the Women, Infant and Children (WIC) program of Allegheny County. The director of the WIC program and their staff suggested that the messaging be framed around something that expectant mothers and families do to prepare for the arrival of the baby, like the babyproofing and “nesting”. Babyproofing typically includes the process of making the home safe for the baby and “nesting” includes the cleaning and organizing that typically occurs during the end of the pregnancy. Including lead in an existing conversation about babyproofing and/or nesting allows for pregnant women to get information about readying their home for their baby in lead safe way while also getting information about potential lead exposures and resources to minimize exposure. After this discussion and the initial literature search, rough drafts of content and formatting were created and sent back to WIC and reviewed by the Bureau of Public Policy and Community Relations who was overseeing this internship.

Feedback and input from WIC regarding content and messaging was incorporated into two different forms; a traditional brochure and a double-sided handbill. Through several email chains and calls, The ACHD Maternal and Child Health (MCH) program staff feedback was also incorporated. The MCH division has a home visiting nursing program and they have great insight into what expectant and new mothers experience and prioritize. They suggested the message be as brief and succinct as possible and highlight accessible resources within the county. Additionally, because pregnancy and motherhood can make someone vulnerable and intimidating, they emphasized the importance minimizing fear and highlighting actionable items.

The MCH Home Visiting Service conducted an informal focus group with mothers who were enrolled in the program. The group was given a copy of the drafted brochure and the drafted double-sided handbill. From this meeting, the mothers preferred the double-sided handbill over the traditional brochure and said the less words the better. Additionally, they suggested that there be more graphic presentations of where lead hazards can be found, rather than listing them. Moreover, they thought it would be helpful to have some sort of reference to tracking their child's development and how lead exposure can impact child development. While this is originally out of the scope of the original description of the internship, it was then incorporated into this project.

Content was updated to be more succinct and actionable using the feedback from the informal focus group conducted through the MCH office. Additional research was conducted to see how childhood development milestones could be incorporated into the message regarding lead exposure. This research included additional searches within the CDC and American Academy of Pediatric sites, with key words including "lead and childhood development" and "lead and developmental milestones." These searches resulted in a variety of existing information and graphics that reflect the different milestones and motor developments during the first two years of

life and how lead can impact development. Based on this, the drafted materials included a double-sided handout specific to lead exposure, risks, and resources during pregnancy. An additional double-sided handbill focusing on child developmental milestones through the age of two and how to minimize lead exposure during this critical time. The updated drafted materials were then sent out to WIC, MCH, ACHD Bureau of Public Policy and Community Relations, and to a pediatrician in the Pittsburgh area. Initially, the formative research process was to include an OB/GYN, but communication efforts with existing contacts did not yield an interview. However, through the overall process of formative research, feedback was incorporated, and content was updated.

3.2 Health Communication Theories

While the formative research and feedback from the stakeholders is critical to creating effective print materials, it is also best practice to create materials rooted in theory. Ultimately, the purpose of this intervention is to inform and educate expectant and new parents/families and their providers about lead exposure, risks, policies, and resources. There are many theories and models that could be used to guide the direction of communication for pregnant women and their obstetric and gynecological providers, but the Consumer Information Processing Model (CIP) and some constructs of the Health Belief Model (HBM) were relevant and used when creating the targeted print materials.

Motivation is typically defined as the drive behind an individual's ability and desire to seek information and pay attention to the information²⁰. Based on this, "the central assumptions of CIP are that: (1) Individuals are limited in how much information they can process, and (2) in order to increase the usability of information, they combine bits of information into "chunks" and

create decision rules, known as heuristics, to make choices faster and more easily”²⁰. Because the primary focus is to inform and educate both providers/staff and parents/families and to see a resulting action of babyproofing/nesting in a lead safe way, this theory is incredibly applicable. Combining lead exposure into the concept of safely babyproofing the home, we create a chunk of information that can be more easily processed. This similar concept was employed when creating the materials that depict child development and lead exposure. Parents and physicians are aware that there are certain milestones that their children are expected to reach and combining developmental milestones to lead exposure creates a more succinct “chunk” of information.

In addition to CIP, the Health Belief Model (HBM) can also help describe the behavioral actions of the family. Overall, the Health Belief Model addresses an individual’s perception of threat and their desire to adopt the recommended behavior for managing and preventing the threat¹⁹. Specifically, the HBM outlines four constructs that can represent the threat and/or health problem and the net benefits²⁰. These four constructs are perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, and can account for the individual’s “readiness to act”²⁰.

We can use this model to show that once parents are informed of the perceived benefits preventing and minimizing lead exposure and the dire risks of potential lead exposure, the net benefits outweigh any perceived threat²⁰. By informing parents of the long-term and immediate effects and impacts of lead exposure, there is an obvious and apparent perceived severity of the threat of lead exposure. Additionally, the perceived susceptibility is clear in the fact that most families in Allegheny County live in older homes are at the highest risk for childhood and prenatal lead exposure. There are many perceived barriers that could outweigh the threat and susceptibility, including the individual’s financial and physical ability to limit lead. Additionally,

the perceived benefits of addressing lead exposure can impact the individual's readiness to act. This is clearly seen in families and parents who have the mentality that they were exposed to lead and they turned out just fine. However, the susceptibility and the severity will create a "readiness to act" for the individuals and families. Ultimately, these theories provide insight into how the information presented in the print materials will lead to changes in utilization of services and behaviors regarding lead exposure.

3.3 Targeted Print Materials and Dissemination

The content was finalized using the relevant health communication theories, formative research with key stakeholders, and messaging from existing lead education materials. The ACHD graphic design team then used the existing themes and design guide to brand the print materials with the Get Ahead of Lead logo. This information is a part of the larger Get Ahead of Lead campaign and there is value in creating a cohesive and recognizable look that can be easily identified. The graphic design team decided to use warm neutral colors, easy to read font, and inclusive graphics. The final materials created through the internship, included:

- Double sided handbill designed to target pregnant women and educate on lead exposures, risks, resources and way to babyproof the home in a lead safe way
- Double sided handbill designed for expectant families, parents and early childhood providers to follow/track developmental milestones while minimizing/preventing lead exposure

- A letter targeted to OB/GYN and midwife practices/providers to inform on current information regarding lead exposure/risks during pregnancy and providing information about the resources offered in Allegheny county

The final materials are represented in Appendix B and are available for public use through the ACHD website.

The last phase of the internship focused on disseminating the finalized print materials. The materials were originally disseminated through multiple avenues, including;

- Mass mailing to OB/GYN and midwife practices and providers in Allegheny County
- WIC clinic appointments and resource tables/boards in clinic waiting rooms
- MCH home visits
- Local non-profit, Women for Healthy Environment (WHE), and their outreach efforts

Additionally, the targeted materials continue to be used in WIC, MCH and WHE efforts and are available to the public online at the ACHD's website.

The process included finalizing the design of the print materials, sending the documents to the print shop for mass printing, assembling the packets of information to be mailed, sorting specified amounts of materials to be sent to WIC and MCH, and sending the printed materials to the providers. First, because this was done within a government agency, every piece of printed materials had to be approved within the department and by the director of the Health Department. Once the materials were approved, they were sent to the county print shop where mass quantities were printed for each hand bill and provider letter. Once every item was printed they were then sorted to be sent to WIC, MCH and included in the provider mailing. The packets to be sent to the

providers included the targeted print materials included in Appendix B as well as additional information regarding resources in Allegheny County, including a comprehensive double-sided resource sheet, a brochure specific to the housing renovation program (Lead Safe Homes) and a brochure addressing nutrition and lead absorption. The packets were assembled and mailed to identified providers/practices.

4.0 Proposed Evaluation

4.1 Health Communication Evaluations in the Literature

A health communication evaluation plan can drastically improve the impact and effectiveness that other health communication campaigns can have, creating more successful forms of health communication. While it is best practice to evaluate health communication, it is common for evaluation to be omitted due to lack of time and funding. Moreover, when an evaluation is conducted, it is rarely published or available in academic literature. However, some searches including key words like “health communication evaluation,” “health education evaluation,” “lead education evaluation,” and “print material evaluation” led to a handful of articles focused on evaluating the impact and use of print materials, which are discussed below.

In an effort to improve influenza vaccination rates among pregnant women, a randomized control trial was done to understand the use of theory driven pamphlets to change and inform behavior¹⁹. This study focused in evaluating the use of a patient-center pamphlet and the impact that the pamphlet had on pregnant women and their choice to get vaccinated²¹. While the primary outcome measure was influenza vaccine uptake, the pretest and posttest questionnaire assessed the four main HBM variables with one item for each variable: susceptibility, severity, benefit, and barriers²¹. This study evaluated an effort very similar to the implementation of the targeted health communication efforts employed in the Get Ahead of Lead campaign and was used to guide the proposed evaluation. Ultimately, it was found that the pamphlet contributed to the targeted behavior change with a significantly higher vaccine uptake in the interventional groups as opposed to the control group, supporting the use of printed materials to lead to behavior change²¹. However,

it is noted that a one-time vaccination is a behavior that has different costs and benefits than adopting lead-safe practices.

Another study, specific to lead exposure, evaluated the New York City Department of Health and Mental Hygiene media campaign to increase parent awareness of childhood lead poisoning and ways to protect their children and families from being exposed²⁰. Specifically, the campaign had three objectives; “increase knowledge of the connection between dust from peeling lead paint and childhood lead poisoning, facilitate parents’ engagement in behaviors to protect their children from lead poisoning, and focus attention on building owners’ responsibility to fix peeling paint in NYC residences”²². Cross-sectional surveys were used to measure sociodemographic characteristics, campaign exposure, knowledge of lead exposure sources, and knowledge of lead poisoning prevention behaviors²². It was found that individuals who were exposed to the campaign had higher percentages checking their home for peeling paint²². While the researchers note that there are limitations to this study and the surrounding environment and other media exposures can contribute to this change, those exposed to the media campaign benefitted greatly. This evaluation is specific to a local health department’s effort to address lead exposure through education materials and how the effort impacted behavior change, creating a guiding example for the proposed evaluation.

4.2 Types of Evaluation

There are different types of evaluation that can be employed depending on resources and the aims of a specific program. These include, process, outcome and impact evaluation. Process

evaluation specifically captures and examines the procedures and tasks involved in implementing an activity²³. This type of evaluation also can collect information about the administrative and organizational steps involved in the program²³. Outcome evaluation is commonly used to measure the effectiveness in achieving stated objectives and goals that are outlined in the program²¹. Impact evaluation measures long term effects of the program and the overall impact that the program has on improving health²³. The proposed evaluation will focus on process and outcome measures for the purposes of evaluating the use of the targeted print materials focused on lead education for pregnant women and their providers in Allegheny County. It is beyond the scope of this effort to look at impact evaluation, because it would not be possible to link the dissemination of one handbill to an overall decline in childhood lead exposure throughout the county.

4.3 Process Evaluation

Process evaluation is critical to measuring and keeping track of what materials have been distributed, how often they are being distributed, and to whom. For the purposes of evaluating the health communication efforts made by the ACHD to disseminate information to pregnant and expectant women and families, it is important to evaluate how many handbills and posters were distributed through the mass mailing, through the WIC clinics, through MCH home visits and through WHE activities. It is important to capture how many print materials were shared with the community partners and how many were then distributed to the patients and families. The proposed process evaluation will measure:

- how many handbills/posters given to WIC at all locations
- how many handbills given out at WIC at all locations

- how many handbills/posters mailed to providers/practices
- how many handbills/posters returned to sender from mail
- how many handbills/posters given to MCH
- how many handbills/posters given at MCH home visiting appointments
- how many handbills/posters given to WHE
- how many hand handbills/posters at WHE child care center visits

For purposes of proposing a realistic and low-cost evaluation, these process measures can be evaluated using spreadsheets and weekly reporting. The following variables will be tracked in the evaluation: 1) number of handbills distributed to each partner, 2) number of handbills distributed to people through existing partnerships, and 3) number of nondelivered handbills print materials. This spreadsheet will be updated through a weekly email report given by the WIC, MCH and WHE partners.

4.4 Outcome Evaluation

Outcome evaluation is crucial to understanding if the intervention led to changes in behaviors as well as changes in attitudes and knowledge. Ultimately, the goals of the creating targeted lead education materials for pregnant women were to inform expectant mothers and their providers about lead risks/exposures, provide easy ways to minimize lead exposure during and after pregnancy and provide direct information about existing lead resources in Allegheny County. Identified measures that can be looked at to indicate changes in knowledge and behaviors, include:

- utilization of services and/or resources identified on the handbill

- change of behaviors including babyproofing/nesting in a lead safe way
- increased number of pregnant women addressing lead exposure in prenatal appointments
- change in number of children/pregnant women tested for elevated blood lead levels

Each of these indicators show a change in knowledge, attitudes or behaviors and can be measured through multiple avenues.

To measure utilization of services and resources, I propose to work with the agencies and programs that provided the services in order to measure the number of pregnant women utilizing the resources promoted in the handbill. These agencies carefully track information such as how people are referred and where they received their information which is how I would tabulate the information and arrive at an accurate number of pregnant women engaging with the resources. Fortunately, for the purposes of evaluating this specific effort, the primary resource, Allegheny Lead Safe Homes Program, is a close partner with the ACHD. To identify if they had any changes in utilization from exposure to the Lead and Pregnancy Handbill, an audit of their intake forms can be done. When enrolling in the Lead Safe Homes program, it is noted where/how the person was referred to the program. This can be tracked after the dissemination of the printed materials and can be reported monthly from the partners within the Lead Safe Homes Program. Additionally, changes in the number of reported elevated blood lead levels (EBLL) in children can indicate changes in knowledge about lead exposure. While this is not directly indicative that the targeted print materials for pregnant women led to higher proportions of children being tested for lead, it can indicate a change in knowledge and behavior overall.

In addition to measuring utilization of resources, this evaluation will also capture changes in knowledge and behavior. The ideal proposal to truly measure changes in knowledge, behavior and attitudes would be to conduct a pre-intervention and post-intervention study, like the survey

conducted to assess the impact of a lead education campaign in New York City. However, with the limited time, funding and capacity of a local health department, a post distribution cross-sectional survey is being proposed.

The survey will be a written, self-reported, anonymous paper survey that will be distributed throughout OB/GYN and midwife practices. While paper surveys are becoming less common and do carry a data entry and data compilation burden, it is the most accessible and convenient form of a survey to be distributed across multiple health networks. Each practice will be given the choice to participate in distributing the surveys and they will then be collected, compiled, coded and analyzed by the ACHD and/or a potential graduate intern. Ultimately, through this survey the ACHD can identify if the target population has been sufficiently reached and if the print materials lead to changes in behavior and knowledge. Three months after the initial mass mailing to providers, the survey will be administered throughout the partnering provider offices. The survey will only be given to and completed by Allegheny County residents. This survey will measure exposure to the print materials and changes in knowledge and behaviors. Specifically, the survey will measure:

- print material exposure
- inquiry about lead at prenatal appointment
- knowledge of lead exposure sources
- knowledge of lead exposure prevention practices while babyproofing/nesting

Moreover, the survey will be brief and succinct to create ease among the patients and providers.

The five-question survey will include the following questions:

1. During your most recent pregnancy, have you talked with your provider about prenatal lead exposure? Yes or No.
2. Which of the following are common sources of lead exposure in and around the home?
Select all that apply.
 - a. Dust
 - b. Paint
 - c. Drinking water
 - d. Soil
3. When babyproofing and preparing your home, did you know that there are easy strategies to minimize lead exposure? Yes, I am aware. No, I am not aware.
4. The easy strategies to minimize lead exposure include; filtering drinking water, wiping down hard surfaces, vacuuming with a HEPA filter, repairing and replacing chipping and peeling paint. Please indicate if you have completed any of the listed practices.
Yes, I have completed. No, I have not completed.
5. Have you ever seen these lead education materials? (Pictures of handbills included in survey) Yes or No.

This evaluation design will identify if pregnant women have been exposed to the print materials, if they have asked their prenatal providers about lead exposure during pregnancy, and if they are aware of the lead-safe ways to baby proof and prepare the home for the arrival of the baby. The data will be compiled and analyzed, and correlations can be drawn to indicate whether those who were exposed to the print materials had improved outcomes. This proposed evaluation

would serve as a guideline and tool for future evaluations and will be used to inform and improve local health communication efforts.

4.5 Limitations

The primary limitation of this proposed evaluation is that it is being proposed long after the intervention took place and would be implemented only if the dissemination was replicated in a similar way. Additionally, this evaluation is specific to a targeted communication effort in Allegheny County through the local Health Department and may not be generalizable or applicable for other agencies and organizations. Likewise, much of the success of this communication effort is dependent upon the fact that physicians and partners are distributing the print materials, if there is/was any lapse in distribution, it could impact the evaluation.

The focus of this public health communication effort was to improve awareness and knowledge about lead and change individual behaviors to include lead-safe home practices. The primary limitation of this effort is that it does not touch on the other factors that contribute to lead exposure, including policies to protect children and families from lead exposure, the continually aging infrastructure in Allegheny County, and the lack of oversight among water authorities. While these factors are not being addressed in this targeted outreach to pregnant women and their providers, they are being addressed in the larger health campaign, Get Ahead of Lead and among dedicated community organizations. Additionally, another limitation of this targeted education effort and the proposed evaluation is that it does not account for social media exposure. The

dissemination of the materials was specific to the outlets described in the above sections and did not include dissemination through media outlets include Twitter and Facebook.

5.0 Conclusion

Health communication is vital to creating an informed and educated public and is a crucial step to improving public health. The ACHD prioritizes health education and plays an important role in disseminating information, especially regarding the issue of lead exposure. With the Get Ahead of Lead campaign, the health department has made great strides in addressing lead exposure. However, there are existing gaps in the current structure of disseminating information and this includes the use of social media. There are many studies that show the profound influence social media has on obtaining information and this was a missing element in this health education effort^{24,25}. Additionally, the targeted effort to pregnant women and their providers was limited in that the outreach was primarily done through a mass mailing and with community partnerships but did not include direct outreach to pregnant women. When conducting a similar health education effort, it will be beneficial to include outreach directly to women and their families through support groups, parenting classes and other avenues. The evaluation can then be tailored to truly capture the role of the health campaign and how information influences lead-safe behaviors. As the outreach changes and becomes more specific, the evaluation can be tailored to reflect the narrow scope of the efforts. However, it is important to acknowledge that time, capacity and funding is limited, and mass mailings are an effective way to distribute high volumes of information.

While there are some limitations and gaps in the original dissemination of the information, the knowledge and experiences gained from this opportunity are invaluable. First and foremost, the ACHD prioritized feedback and input to create and foster a truly collaborative experience and approach. This aspect of the process was incredibly insightful and displayed that community information should be made with input from the community it hopes to reach. Most importantly,

this experience provided an opportunity to think and conceptualize how evaluation can improve future health communication efforts.

Appendix A Existing Lead Education Print Materials

More ways to protect myself and my baby from lead:

6. **Don't eat things that could have lead in them**, such as clay, pottery, soil or paint chips. Talk with your doctor if you have ever done this.
7. **Be extra careful if you have jobs or hobbies that involve working with lead**, such as building restoration, plumbing, stained glass work, or making lead fishing sinkers or bullets. Dust filters and dust masks will not keep out lead particles. You may need to use a NIOSH-certified respirator that is properly fitted and uses HEPA filters. Also, wash your hands before eating, and don't eat in the work or hobby area.
8. **If your house or apartment was built before 1978**, when lead paint was still in use, stay away from any repair work being done until the area has been completely cleaned by the workers.
9. Make sure that any people doing renovation, repair or repainting in your pre-1978 home or apartment use lead-safe practices.
10. To get more information about lead-safe practices and how to protect yourself and your baby from lead, call your local health department, 1-800-424-LEAD (5323) or go to www.epa.gov/lead/nlic.htm.



Where can I find out more?

- Ask your health care provider or call your local health department!
- Visit the NYS Department of Health website: <http://www.health.ny.gov/environmental/lead/>
- If you are concerned about lead at your work, call the NYS Bureau of Occupational Health and Injury Prevention at (518) 402-7900 or 1-800-458-1158.



2593 Rev. 7/15

Are You Pregnant?

Learn how to
Protect Yourself
and Your Baby
from
**LEAD
POISONING**



Why should I protect myself from lead?

Lead can cause high blood pressure in pregnant women. Lead can also cause your baby to be born too small or too early.

If you have lead in your body, it can be passed to your baby during pregnancy. Even a small amount of lead in your baby can cause problems with growth, behavior, and your child's ability to learn.



When you protect yourself from lead, you also protect your baby.

How can lead get into my body?

You can get lead into your body by swallowing it or breathing it in. For years, lead was used in paint, gasoline, plumbing, and many other items. Lead is still in some kinds of pottery. As things are used or get worn out, the lead they contain can spread.

Although lead paint was banned from home use in 1978, the dust from lead paint is still the number one source of childhood lead poisoning.

What is my lead risk?

If you answer "yes" to any of the following questions, ask your doctor about a lead test.

- Do you live in a home or apartment built before 1978?
- Have there been any recent home improvements or repairs where you live?
- Were you born, or have you ever lived, in another country?
- Do you use medicines, supplements, cosmetics, or spices from another country?
- Do you, or someone with whom you live, have a job (such as construction) or hobby (such as stained glass or making bullets) that could bring you into contact with lead?
- Do you use pottery that was made in another country, painted china, or leaded glass?
- Have you ever eaten or chewed crushed pottery, soil, paint chips, clay, or other things that aren't food?



How can I protect myself and my baby from lead?

1. **Ask your doctor about a lead test.** A blood test is the only way to know how much lead is in your body. Lead poisoning usually does not make you look or feel sick.
2. **Make sure you get your newborn tested for lead** if you ever had an elevated blood level as a child or as an adult.
3. **Eat foods rich in calcium, iron, and vitamin C to help your body from absorbing lead.** Foods with calcium include milk, cheese, and yogurt. Foods with iron include beans, meat, peas, spinach, eggs, and cereal. Foods with vitamin C include oranges, orange juice, grapefruits, tomatoes, and green peppers.
4. **Use lead-free dishes and pots.** Lead is more likely to be in pottery from Latin America, the Middle East, India, and in painted china. Lead is also in pewter, leaded glass, and crystal.
5. **Avoid using traditional medicines, cosmetics, or spices from other countries.** They are more likely to have lead in them than products made in the U.S. Lead has been found in Ayurvedic medicines; cosmetics such as kohl and surma; and in liga, greta, azarcon, litargirio, and other preparations.

More ways to protect yourself on the back...

Figure 5 New York State Department of Health Lead and Pregnancy Brochure

What is lead?

Lead is a heavy metal that has been used for thousands of years to make many products, and is part of our world today. Being exposed to too much lead can cause serious health problems. Young children and the developing fetus are most at risk. The good news is that you can prevent exposing your unborn or newborn baby to lead.

Why be concerned about lead?

Lead poisoning can cause serious harm to your baby's health.

Possible effects of lead poisoning:

- ✓ Lowered Intelligence
- ✓ Decreased Coordination
- ✓ Shortened Attention Span
- ✓ Aggressive Behavior
- ✓ Reading and Other Disabilities

How can you become lead poisoned?

Lead enters your body each time you breathe in fumes or dust, or swallow something that has lead in it. Many pregnant women have cravings to eat non-food items during pregnancy. This can cause exposure to lead.

For adults, exposure normally happens through a job, during repair or remodeling of an older home, or while doing a hobby where lead is used. Making stained glass or jewelry with lead solder and target shooting are some examples.

You or your housemates could be exposed to lead through a hobby or at your jobs. If a housemate is exposed to lead and does not shower and change clothing before coming home, you may then be exposed to the lead on their clothing, in their hair, etc.

How do you know if you or your baby have been exposed to lead?

There are no signs or symptoms of lead poisoning until you are very sick. The only way to know if you have been exposed to lead is to get a blood lead test by:

- ✓ Visiting your medical clinic (as part of your prenatal exam).
- ✓ Contacting the local public health office nearest you for information on services in your area.

If you live in a home built before 1978 and any remodeling is being done, you and your home should be tested to make sure that you and your baby are not being exposed to lead.

Is there financial assistance for home remodeling?

Contact your local housing agency for financial assistance with home remodeling needs. Some counties have loans and grants available for controlling lead hazards.

What can you do to . . . prevent lead poisoning?

The best way to prevent lead exposure during pregnancy and breastfeeding is to:

- ✓ Talk about possible risks with your doctor if your job includes working with or around lead. You will need to decide if you should get a job transfer.
- ✓ Stay away from work areas during repair or remodeling of a house built before 1978.
- ✓ Never sand or scrape lead-based paint (all repair or remodeling needs to be done using lead-safe work practices).
- ✓ Have all household members who are exposed to lead through a hobby or job do the following:
 - shower after working with lead
 - wash their clothes separately from other household clothing
- ✓ Avoid eating non-food items, (such as soil, clay, plaster, paint chips, pottery), using herbal medicines, and traditional remedies or cosmetics.
- ✓ Test your home and water for lead. Paint chips, water and soil can be tested for lead. (Call MDH or your local health department for more information.)
- ✓ Avoid using imported pottery and leaded crystal for preparing or eating food.

MDH Lead Web Site:
www.health.state.mn.us/divs/eh/lead

Environmental Impacts Analysis Unit
 P.O. Box 64975
 St. Paul, MN 55164-0975

If you require this document in another format, such as large print, Braille, or cassette tape, call (651) 201-5000

For more information about lead screening, call:

(651) 201-4610; or
 1 (800) 657-3908; or
 MDH TTY (651) 201-5797
 MN Relay Service TTY 1-800-627-3529



Local Contact Information
Label Here

Printed on recycled paper with at least 30% post-consumer waste.

Funding for this project was made available by the Centers for Disease Control and Prevention, Grant #U57/CCU522841-03.

IC #141-1557
06/02/2006

Lead Exposure during Pregnancy and Breastfeeding



Keeping your baby safe . . .



Environmental Health Division
Environmental Surveillance and Assessment Section
Environmental Impacts Analysis Unit

Figure 6 Minnesota Department of Health Pregnancy and Breastfeeding Brochure

LEAD poisoning

Are You Pregnant?

Prevent Lead Poisoning. Start Now.

Lead poisoning is caused by breathing or swallowing lead. Lead can pass from a mother to her unborn baby.

Too much lead in your body can:

- Put you at risk of miscarriage
- Cause your baby to be born too early or too small
- Hurt your baby's brain, kidneys, and nervous system
- Cause your child to have learning or behavior problems

Lead can be found in:

- Paint and dust in older homes, especially dust from renovation or repairs
- Candy, make up, glazed pots, and folk medicine made in other countries
- Work like auto refinishing, construction, and plumbing
- Soil and tap water

Contact your local health department to learn more.



Figure 7 CDC Are You Pregnant Flyer

Appendix B Targeted Print Materials



August 24, 2018

Dear Obstetric and Gynecological Health Care Provider:

As you know, lead is a neurotoxin and exposure can cause learning disabilities, behavioral problems, and, at very high levels, seizures, coma, and even death. Lead comes from many sources such as old paint, water from lead pipes, soil, and jewelry and ceramics from foreign countries.

Maternal blood lead concentration is highly correlated with fetal blood lead concentration. **Every woman can and should take steps to prevent lead exposure during pregnancy.**

While ACOG and the CDC do not currently recommend universal screening of all pregnant women, **pregnant women with any one of these risk factors** associated with lead exposure should have their blood lead level tested. *Insurance coverage of blood lead level tests may differ and is not guaranteed.*

- Living in or renovating a home built before 1978
- Recent immigration
- Occupational exposure/hobbies: e.g. painting, remodeling, metal work, or using firearms
- Nutritional status: low levels of calcium, iron, vitamin C
- Lead stored in the bones from known previous exposure that is redistributed during pregnancy and lactation
- Some culturally specific practices, such as the use of traditional remedies or imported cosmetics
- Use of traditional lead-glazed pottery for cooking and storing food
- Pica practices

According to the CDC, **5 µg/dL is the reference value at which pregnant women should receive follow-up confirmatory testing and treatment.** Case management and additional guidelines for the identification and management of lead exposure in pregnant and lactating women can be found at <https://www.cdc.gov/nceh/lead/tips/pregnant.htm>. Additional information, including the Allegheny County Lead Task Force Recommendations, can be found at www.achd.net/lead.

Our goal is to equip physicians and staff in your practice with useful information as part of a community response to this public health issue. The attached materials include resources for pregnant women with elevated blood lead levels, as well as information about programs for Allegheny County residents that provide home risk assessment, abatement, and remediation of lead.

Thank you for helping us prevent lead exposure whenever possible. To request additional brochures, or for more resources, please visit www.achd.net/lead. For more information or questions please call 412-687-ACED (2243).

Thank you,

Karen Hacker, MD, MPH
Director, Allegheny County Health Department



KAREN HACKER, MD, MPH, DIRECTOR
ALLEGHENY COUNTY HEALTH DEPARTMENT
542 FOURTH AVENUE • PITTSBURGH, PA 15219
PHONE (412) 687-ACHD (2243) • FAX (412) 578-8325 • WWW.ACHD.NET

Figure 8 OB/GYN and Mdiwife Provider Letter

Preparing your home for your new baby?

Get on your hands and knees so you can see things from baby's eye level and remove dangerous items.

Baby proof your home by using outlet covers, safety latches, window guards, gates around stairs, and by keeping cords out of baby's reach.

Limit lead exposure in your home:

- Use a damp rag or wet mop to clean all flat surfaces that collect dust.
- Use a vacuum with a HEPA filter.
- Consider repairing old and damaged windows, doors, and paint.
- Cover bare soil with grass, mulch, or gravel and remove shoes before entering your home.
- Use cold tap water or water filtered through an NSF-approved filter; especially when making baby formula. Be sure to boil water after filtering
- Consider getting your water and soil tested and your home inspected.

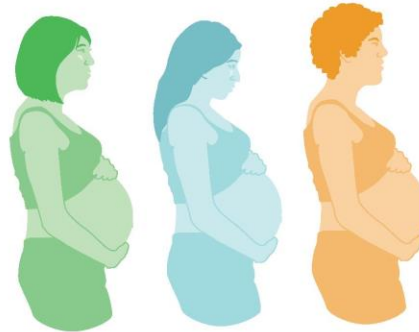


The Allegheny County Lead Safe Homes Program provides FREE home repairs to eligible families. Call 412-227-5700 to find out more!

For more information to get ahead of lead, visit: www.achd.net/lead or call 412-687-2243.

Lead and pregnancy

Lead is a poison found in our daily lives. Breathing in or swallowing lead can harm you and your baby.



Limit the lead in your life:

- Wash your hands often, especially before eating or after being outside
- Eat foods high in calcium, iron, and vitamin C
- Stay away from repair work being done in your home to avoid breathing in lead dust, and be sure to use an EPA certified lead-safe contractor
- Wash your clothes separately from your child's if you have a job or hobbies that may involve lead, such as stained glass or shooting firearms
- Avoid using health remedies, foods, spices, and cosmetics brought from other countries
- Avoid using clay pots and brass dishes to cook, serve, or store food
- Never eat non-food items such as clay, pottery, soil, or paint chips

Ask about lead at your next prenatal visit!



005-LD-0818

www.achd.net/lead

Figure 9 Lead and Pregnancy Handbill

Remember to get your baby tested for lead at their one-year wellness visit!

12-18 Months

- May take a few steps without holding on and starts to walk alone
- Pulls toys while walking
- Drinks from a cup and feeds self
- Can help undress self

As your baby becomes more independent, you can avoid lead exposure by regularly washing their toys and their hands before eating.

18-24 Months

- Walks up and down stairs holding on
- Begins to run
- Climbs onto and down from furniture without help
- Kicks and throws a ball

When your baby starts to play more outside, be sure to keep bare soil covered and wash hands after playing.

Don't forget follow up blood lead testing at 24 months!

For more information to get ahead of lead, visit: www.achd.net/lead or call 412-687-2243.



Lead and your baby

Babies bring hands to their mouths as early as 2 months and will "mouth" objects well into toddlerhood. That's why wiping down surfaces and toys to remove lead dust is so important.

0-6 Months

- Can hold head up and begins to push up when lying on tummy
- Pushes down on legs when feet are on a hard surface
- Brings hands to mouth
- Rolls over in both directions

Lead can be found in dust in older homes, so use a rag or mop with soapy water to clean all flat surfaces. Get your water tested for lead, or use a NSF water filter.

6-12 Months

- Crawls
- Sits without support
- Pulls to stand
- Walks holding on to furniture ("cruising")

As your baby becomes more mobile, check your home for peeling/cracking paint throughout the home, especially on baseboards, window and door trim to avoid lead exposure.

12-24 Months on other side!

008-LD-0818

412-687-2243 www.achd.net/lead

Figure 10 Lead and Your Baby Handbill

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