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Parental Awareness and Lead Poisoning: a Suburban Analysis

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Abstract. Lead poisoning is one of the most common pediatric health problems in the United States. A direct result of industrialization, the toxic substance lead has contaminated our environment. Parents of young children should be aware of the hazards of lead, the environmental sources, the need for annual screening, the implications of screening results, and steps to reduce the chances of exposure.

Questionnaires were distributed at a pediatrician's office. Parents with children under six years of age were asked to complete the survey. Sixty-two questionnaires were completed and returned. It was determined that parents have a good understanding of the pathways for exposure and general knowledge about lead, but their knowledge was minimal about less common lead hazards, prevention and the role of nutrition in helping to prevent lead poisoning.

The Center for Disease Control has stated that lead poisoning is one of the most common yet preventable pediatric health problems in the United States today. Despite regulatory action to decrease lead in our environment and increased awareness of the health risks associated with lead, the persistence of lead poisoning remains a challenge to society and agencies dedicated to eradicating this disease.

Lead can affect every system in the body. Like calcium, the body takes up lead as a mineral eventually depositing it in bones and teeth where it can accumulate over a lifetime. In very severe cases of lead exposure (blood levels >=80 ug/dl) coma, convulsion and death can occur. Eleven children died from lead poisoning between 1979 and 1988 (Staes, C., 1995) Significantly lower levels, as little as 10 ug/dl, have been associated with decreased intelligence and impaired neurobehavioral development. Other irreversible effects include decreased muscle and bone growth, hearing damage, nervous system and kidney damage, speech, language and behavior problems, poor muscle coordination and fertility problems (ATSDR, 1992).

Generally, children are more a risk for exposure than adults. Lead is particularly harmful to the developing brain and nervous systems of young children. Incomplete physiological developments within their systems allow a greater absorption of lead into the nervous system. Children also retain and absorb more lead in proportion to their body weight than adults do. Young children exhibit more hand-to-mouth activities and pica, putting non-food items into one's mouth which increases their chances for exposure.

Lead poisoning is widespread. All socioeconomic groups, geographic areas, racial and ethnic groups are at risk for exposure. Estimates from 1984 indicated that 17% of the children in the United States had elevated blood lead levels. Lead poisoning is not solely a problem of the inner cities, but percentages nevertheless remain highest in urban areas where housing is old and conditions deteriorated. Despite substantial drops in the number of children poisoned by lead since the 1970's the latest national figures from the National Health and Nutrition Examination Survey estimate that nearly 1 million children age 5 or younger have elevated lead levels (JAMA, 1997).

Recent federal regulations have significantly reduced lead in the environment. In 1978 the Consumer Product Safety Commission banned the use of lead-based paint for residential use. Because of its durability lead-based paint was used extensively prior to the 1970's. The Environmental Protection Agency reduced the amount of lead allowed in gasoline in 1978. In 1986 and again in 1988 Congress changed the Safe Drinking Water Act to restrict the use of lead in pipes and solder used in public water systems and residential plumbing. And in 1995 the United States banned the use of lead solder in cans used for storing food (EPA: Lead in Your Home, 1998).

These regulations have made significant impacts on the decline of childhood lead poisoning, however, the problem is far from solved. Several factors still hinder relief efforts. Lead-based paint is the source of greatest public concern. It is the most common cause of elevated lead levels. Exposure occurs not only when children ingest chips or flakes of paint but also when children ingest soil and dust contaminated with lead-based paint. Older homes in poor condition or that have been recently renovated pose the greatest danger. Abatement, or the permanent removal or encapsulation of lead, in older homes is difficult, extremely costly and should be done by licensed lead abatement contractors. In the United States approximately 83% of privately owned homes and 86% of public housing built before 1980 contain lead-based paint. (JAMA, 1997). Lead poisoning is also considered to be a disease of the poor that can easily be remedied by better housekeeping and childrearing practices. Others believe the disease would simply disappear silently after the ban of lead-based paint. (US Department of Health and Human Services, 1991). And finally the reduction of the definition of elevated blood levels over the last 30 years has increased the number of children with elevated blood levels. A blood lead level of 25 ug/dl in 1985 is now considered unacceptable for children. In 1991 the CDC revised the definition of elevated blood levels for children under six based on new research on the effects of low-level lead exposure in children. Accumulating data linked low-level lead exposure to neurobehavioral problems and decreased intelligence. Based on these results the CDC determined that blood lead levels between 10 - 25 ug/dl can permanently and adversarily effect children (CDC, 1991).

The current strategy to prevent childhood lead exposure is to screen children for elevated lead levels. This practice identifies children only after exposure has occurred. In 1996 New Jersey enacted a law requiring all primary care physicians to perform lead screening on all children under six years of age. Mandated reporting of all blood tests to the State Department of Health enables agencies to identify high-risk areas. Ideally, this will serve to direct funds and increase education programs. Strategies toward primary prevention, preventing lead poisoning before it occurs, are being developed and implemented. Such strategies include identifying community characteristics associated with a prevalence of elevated lead levels, the development of risk assessment questionnaires to identify potential-at-risk children (CDC, 1991) and parental counseling (Chaisson, Glotzer, 1996). The treatment and environmental modification of children who are already poisoned is no longer sufficient.

The CDC advocates outreach and education as an integral part of intervention programs to help manage lead hazards at the community level. Education programs provide information for parents and communities about lead poisoning and urges parents to do all they can to keep their children safe at home. Parents of young children should be aware of the hazards of lead, the environmental sources, the need for annual screening, the implications of screening results, and steps to reduce the chances of exposure.

The purpose of this study is to determine how much parents know about lead poisoning and ways to reduce the risk of exposure. The focus is on an affluent suburban neighborhood where the majority of home-owners are well-educated young couples with children and where the potential for exposure to lead-based paint exists.

Literature Review.

Every child relies on his parents as their first primary caregiver and educator. Thus parents play an important role in the health of their children. Parents are responsible for health-related decisions concerning their children. "Parent-involvement is the participation of parents in every facet of the education and development of children..."(Soldano, 1997, 294). Most parents have a desire to be involved and to keep well-educated regarding health issues and their children. Unfortunately parents' knowledge about health and safety is generally accumulated through informal channels such as word of mouth and past experiences (Hendricks, 1996). Regardless of the source, most parents believe that serious childhood injuries are preventable (Eichelberger, 1990).

Little is known about parents' knowledge and attitudes concerning the health of their children. Recent studies have shown that there is a significant need for increasing the parental awareness level regarding childhood health issues. Concurrently there has been a trend towards defining strategies to improve parental awareness and creating proactive programs to meet the educational needs of parents regarding childhood safety (Soldano, 1997; Bass, 1995; Hendrick, 1996; Eichelberger,1990).

The Injury Prevention Program (TIPP) was established by the American Academy of Pediatrics in the spring of 1983. Focused on children birth through age 4, the program emphasized educating parents about injury prevention. Bass (1995) reviewed the first ten years of the program and determined that parents still have a need for educational programs about childhood safety and prevention and, more important, that increasing

parental knowledge has a positive effect on decreasing childhood injuries and increasing preventative behavior.

Hu, (1996) Eichelberger (1990) and Hendricks (1996) all reported some degree of parental awareness regarding children's safety issues, but found that parents lacked knowledge about prevention and effective countermeasures. They all found that elevating parental awareness about childhood health risks and preventative measures is beneficial towards changing behaviors.

In a telephone survey including over 1500 parents in Canada, Hu (1996) reported parents had a limited understanding of the major causes of childhood injuries. Likewise, Hendricks and Reichert (1996) found a great need to improve parental awareness regarding the safety of young children. Using a questionnaire designed to represent parents' behavior which could affect children's health and safety, they identified behaviors that are not regularly practiced by parents. While the study identified many behaviors that more than 90% of parents routinely lived by, the study also pin-pointed other behaviors that fewer than 60% of parents habitually practiced.

Another national survey collected information on parental understanding of childhood health risks and attitudes towards safety programs via telephone (Eichelberger, 1990). The results indicated a poor understanding of many childhood safety issues. Many parents hold an erroneous belief that "being careful" is sufficient to protect their children. Eichelberger concluded that increasing parental awareness is a necessary step in improving the safety of children.

Bass et al, (1993) conducted a literature search to identify articles about childhood injury and prevention. Of the 20 articles included in the study, 18 showed beneficial outcomes related to preventative counseling with the parents. Beneficial outcomes were measured by increased parental awareness, improved parental behavior regarding prevention or decreased injury occurrence.

In January 1991, the US Public Health Service issued a strategic plan for the elimination of childhood lead poisoning. The report emphasized preventing lead poisoning rather than treating exposed children. The plan was based on the rationale that through identification of the source and primary and secondary preventative techniques, lead poisoning can be eradicated. The agency recommended providing anticipatory guidance and education to parents on how to provide lead-free environments and preventative behaviors to eliminate or decrease exposure (Committee on Environmental Health, 1993).

Only a few studies describing parental knowledge about lead and preventative measures have been published. Binns (1998) and Mahon (1997) both assess parental knowledge about lead and preventative behaviors through in-person interviews and questionnaires. Their results were similar. Parents did not identify lead poisoning as a major health concern and showed limited knowledge about ways to prevent exposure and preventative measures. Chiasson and Glotzer (1996) found that approximately one-third of parents recalled ever being educated about lead poisoning or prevention by a health care provider. Their findings were similar to the results from Binns (1998) and Mahon (1997).

Several studies have been published about parental actions and attributes to reduce lead poisoning. Smitherman (1996) examined attributes of primary caregivers that might influence lead levels in children. Questionnaires were completed at a pediatric clinic. She found that greater knowledge of lead poisoning is correlated with decreases in the child's lead levels.

Porter (1997) explored factors associated with parental actions to reduce lead exposure and to identify the specific motivations for parents to reduce lead exposure. She found a positive relationship between having information about the risks of lead and taking steps to reduce exposure. There was a strong relationship between parental belief that a child is "exposed to too much lead" and parental actions to reduce exposures. With proper professional guidance and education, parents can prevent their children from being exposed to lead. She concluded that parents can be key actors in the prevention of childhood lead exposure.

Methodology.

Are parents aware that lead is a health risk for young children and are they aware of ways to prevent and/or reduce exposure? The Chicago Lead Knowledge Test was designed to describe parental knowledge about lead. I chose to use it as the survey instrument because of its simplicity, validity and reliability. It is a questionnaire consisting of 24 questions requiring a 'yes', 'no' or 'I don't know' response. The questionnaire was developed and reviewed by multiple lead experts and health care providers involved in the Chicago Area Health Care Providers' Lead Consortium. Once developed, a set of parents

were asked to complete the questionnaire twice. The Pearsons product correlation between the test and retest was 0.96, proving reliability. The questionnaire is presented in Appendix 1.

Questionnaires were distributed at a pediatrician's office by the office staff. Subjects were parents or caregivers presenting for health-care at their pediatrician's office. Parents were asked to complete the questionnaire while waiting for their scheduled appointment. The questionnaires were self-administered. The office staff collected the completed questionnaires.

Only those parents/caregivers with children under six were asked to complete the survey. Parents were asked to answer questions regarding general information about lead, exposure, prevention and nutrition. The final portion included questions concerning demographic data, housing conditions, whether the parents were aware of a lead problem in their home or had received information about lead from a health eare provider.

I am expecting higher scores on the Chicago Lead Knowledge Test to be correlated with receiving information about lead, knowing whether renovations had occurred in the last six months and knowing of a lead problem in their home. Small percentages of children with elevated blood lead levels in affluent suburban neighborhoods maybe because of increased parental awareness about exposure and prevention.

Results.

Sixty-two questionnaires were completed and returned. All of the respondents were the parents of children presenting for medical care with three exceptions; two grandparents and one 'other caregiver'. Two respondents had high school educations, all

others had as least some college or an associates degree. The mean age of the parent/caregiver was 37.4 years. Ninety-seven percent (97%) of the respondents were home-owners. The average length of residence in their home was 6.2 years. Sixty-eight percent (68%) lived in homes built prior to 1959 and 27% lived in homes built after 1960. Five percent of the respondents did not know when their home was built. Forty-four percent (44%) had done remodeling within the last six months. Sixteen percent (16%) knew of a lead problem in their home. Of these respondents, several had consulted with environmental professionals to assess potential hazards and abatement procedures. One parent had a child become lead poisoned while renovating their home. Only one-third of parents had received information about lead from a health care provider. Demographic data are presented in Table 1.

Table 1
Demographics

	n(%)
Relationship to child	
Parent	59(95)
Grandparent	2(3)
Other	1(2)
Age	
<30	2(3)
30-39	40(68)
40-49	15(25)
>50	2(3)
Educational Background	
<12 years of schooling	0(0)
High school graduate	2(3)
Some college/associate degree	8(13)
College graduate	39(63)
Postgraduate degree	13(21)
Homeowner	
yes	60(97)
no	2(3)
Year home built	
before 1950	29(47)
1950-1959	13(21)
after 1960	17(27)
don't know	3(5)
Years resided in home	
0-4	21(34)
5-9	31(50)
10-14	9(14)
>14	1(2)
Remodeling/renovations in the last 6 months	27(44)
yes	35(56)
no	
Received lead information from a health care provider	20(33)
yes	41(67)
no	
Known lead problem in your home	
yes	10(16)
no	52(84)

The results from the lead knowledge test are presented in Table 2. Correct responses are indicated in bold. To tabulate the results, a "don't know' response was considered an incorrect response. There was a total of 24 questions. The median test score for all respondents was 13. These were educated parents (97% having at least an associates degree, 21% with post-graduate degrees) but they lacked adequate knowledge about lead poisoning. Parents were aware of common lead hazards such as paint, dust and water and that lead can affect a child's IQ. Their knowledge about less common sources of lead, prevention and practices to reduce exposure was minimal.

The majority of parents/caregivers were able to correctly answer questions regarding general information about lead poisoning. Less than 40% of the respondents knew that landlords are required to tell renters about known lead hazards when a lease is signed. Less that 35% knew that a child's blood lead level is usually highest between ages 1 to 2 years when children exhibit age-appropriate hand-mouth activity which increases their risk for exposure.

Similar results were found with regard to exposure. The majority of parents were able to correctly answer questions about exposure and knew the main pathways for exposure; paint, dust, soil and parents who are exposed to lead at their job site. However, only 75% of the respondents knew that imported pottery is not safe for cooking or eating because it contains lead. Eighty-two percent (82%) did not know that some herbal or traditional home remedies may contain lead. The majority of parents (60%) either falsely

Table 2
Lead Knowledge Test

	True n(%)	False n(%)	Don't Know n(%)
General Information			
1. Lead paint chips can be poisonous when eaten.	**61(98)**	1(2)	0(0)
2. High lead levels in the body can affect a child's ability to learn.	**62(100)**	0(0)	0(0)
3. Most children have symptoms right away if they have an elevated blood lead level.	2(3)	**52(84)**	8(13)
4. Apartment owners are required to tell renters about a known lead hazard in the apartment when a lease is signed.	**22(35)**	14(23)	26(42)
5. A child's highest blood lead level generally occurs around 5 years of age.	4(6)	**21(34)**	37(60)
Exposure			
6. Lead paint is more likely to be found in newer homes than in older homes.	0(0)	**59(95)**	3(5)
7. Living in a building during renovation/remodeling can increase a child's exposure to lead.	**56(90)**	2(3)	4(6)
8. One way for children to get lead poisoned is by having lead dust on their hands and then putting their hands in their mouths.	**56(90)**	0(0)	6(10)
9. A child can become lead poisoned during exposure to lead-containing dust.	**56(90)**	1(2)	5(8)
10. Some pottery imported from Mexico or other countries is not safe to use in cooking or for eating because it contains lead.	**45(73)**	2(3)	15(24)
11. Parents who work with lead at their jobs can bring lead home on their clothes.	49(79)	3(5)	10(16)
12. The lead a pregnant woman takes into her body can be transferred to the unborn baby.	**50(81)**	1(2)	11(17)
13. Lead in soil cannot harm children.	2(3)	**53(85)**	7(11)
14. Most cases of childhood lead poisoning are caused by drinking water that contains lead.	8(13)	**32(52)**	**22(35)**
15. Most children get lead poisoning by breathing in lead, rather than by eating or swallowing lead.	14(23)	**25(40)**	23(37)
16. Some herbal or traditional home remedies contain lead.	**11(18)**	8(13)	**43(69)**

Prevention			
17. Washing a child's hands often helps prevent lead poisoning.	**35(56)**	8(13)	19(31)
18. Warm tap water usually contains less lead than cold tap water.	3(5)	**30(48)**	29(47)
19. Lead in water can be removed by boiling.	8(13)	**25(40)**	29(47)
20. Cleaning inside a home with soap and water decreases dust in the home more than dusting or sweeping.	**47(76)**	4(6)	11(18)
Nutrition			
21. The human body needs a small amount of lead for good nutrition.	11(18)	**23(37)**	28(45)
22. Less lead is taken up by the body if a child eats a balanced diet, without too many fatty foods.	**20(32)**	17(27)	25(40)
23. A diet with a good amount of iron-containing foods will help decrease a child's chance of becoming lead poisoned.	**13(21)**	26(26)	33(53)
24. A diet with enough calcium helps prevent lead poisoning.	**13(21)**	17(27)	32(52)

The number and corresponding percentage for the correct response is in bold.

believed or did not know that most children are more likely to be poisoned by ingesting lead rather than inhaling it. Only half of the parents knew that most cases of lead poisoning are not caused by drinking water alone.

In general, questions about lead poisoning prevention and the role of nutrition in preventing lead poisoning were not answered correctly as frequently. Questions about prevention as opposed to nutrition were answered correctly more often. The most commonly correctly answered question about prevention had a 76% correct response rate. The most commonly correctly answered question about nutrition was correctly answered by only 37% of the participants. The majority of parents (67%) did not know that eating a balanced diet would help prevent the absorption of lead. Likewise the majority of parents (79%) did not know that diets rich in calcium will help decrease a child's chance of having elevated lead levels. Only 21% of the respondents knew the beneficial effects of iron in preventing lead poisoning.

Only twenty respondents (33%) remembered receiving lead information from a health care provider. Test scores for those respondents who received information were significantly higher ($p < .01$) than those who did not receive any information. Data for the two groups are presented in Table 3.

Table 3
Scores of Parents Who Received Information versus Parents Who Did Not

	Received Information About Lead	Did Not Receive Information About Lead
n	20	41
mean	16.5	13.8
std	3.28	3.90
range	10-22	3-21

Twenty-seven respondents had remodeling or renovations done to their homes within the last six months. Test scores are presented in Table 4. The mean test score for those families who had recent remodeling was lower than the mean for those who did not

Table 4
Scores for Respondents with Renovations Versus Those Without

	With Renovations	Without Renovations
n	27	35
mean	13.9	15.1
std	3.90	3.74
range	3-22	7-21

Ten parents responded positively to a known lead problem in their home. Parents who knew there was lead in their home had significantly higher test scores ($p<.01$) than those who were unaware of lead hazards in their home. The data is presented in Table 5.

Table 5
Scores of Parents Aware of Lead in the Home versus Parents Not Aware

	Aware of Lead in the Home	No Known Lead in the Home
n	10	52
mean	17.5	14.2
std	2.99	3.80
range	13-22	3-21

Conclusions and Recommendations.

The objective of this study was to determine how much parents know about lead poisoning, exposure and prevention. It was determined that parents have a good understanding of the pathways for exposure and general knowledge about lead, but their

knowledge about less common lead hazards, prevention and especially the role of nutrition in helping to prevent lead poisoning was minimal. These findings were consistent with findings from other studies (Binns, 1998, Mahon, 1997, Chiasson and Glotzer, 1996). In addition, participants who had received information about lead from a health care provider and/or were aware of lead hazards in their home scored higher on the lead knowledge test.

The removal of lead in the environment is the most effective measure to prevent lead poisoning. Removal is not always cost-effective or feasible. The elimination of the environmental source, especially in the urban areas, is often related to legislation and the availability of state and federal funding. Thus the role of prevention becomes crucial faced with environments that are not lead-free. The findings from this study suggest that parents are not well informed about prevention. In conjunction with the strategic plans to eliminate childhood lead poisoning, advocacy groups must find effective ways to increase parental knowledge about prevention. Education about lead prevention should continue to stress that the identification and removal of lead hazards is the optimal solution but that other prevention practices are effective and essential in reducing the incidences of lead poisoned children. Such practices include the enclosure or encapsulation of lead-based paint. Any remodeling should be done by trained contractors, controlling dust and debris during construction. Parents should routinely practice good hand-washing and house-cleaning techniques. There are various environmentally safe products available today that when used as cleaning agents will safely pick up lead particles in the home. Vacuums with hepa -filters will pick up the smallest particles of dust and will not recirculate them into the air. Toys should be washed often and children should be encouraged to play in grassy

areas, away from soil. Cold tap water will not leach as much lead as warm water and should be used for drinking and making infant formula.

Public health agencies have embraced secondary means of treatment and prevention which includes diet and nutrition. Calcium and iron are used extensively as clinical interventions. Balanced diets without too many fatty foods help prevent lead poisoning by decreasing absorption. Not only does a balanced diet help prevent lead poisoning but it will also ensure a healthier life-style overall. Lead poisoning prevention programs need to stress nutrition as well as prevention. Knowledge of prevention is a key element to ensure a continued decline in the number of children exposed to lead and to eventually eliminate childhood lead poisoning.

In addition to prevention, more attention needs to be given to laws and regulations regarding lead and less common sources of lead. New laws and regulations regarding lead and the sale or lease of real-estate were not well known. The EPA and HUD jointly developed the Real Estate Disclosure Rule. Beginning December 1996, owners of any home/property must inform potential buyers/renters about known lead-based paint hazards in the home. Home buyers must be given at least 10 days to conduct a lead inspection. Owners must also provide a copy of the EPA pamphlet *Protect Your Family from Lead in Your Home*. Other sources of lead such as folk remedies and nontraditional medicine can poison children. "Greta" and "Azarcon" are two examples used by Hispanic and Asian communities to treat upset stomachs. Ethnic groups that are potential users of these poisonous remedies should be targeted by public health organizations.

The health care provider plays a critical role in the prevention and management of childhood lead poisoning. Primary care physicians are one of the main resources for parents when educating themselves about childhood safety issues. Health care providers provide participatory guidance and education to parents about the major sources of lead, how to prevent lead poisoning and how to reduce blood lead levels. Health care providers also coordinate with other agencies involved in lead poisoning prevention programs and ensure medical follow-up when indicated. As this study suggests, the health care providers are not adequately educating parents about lead poisoning, prevention and nutrition benefits. Only one-third of the respondents received information about lead from a health care provider. Educational materials about lead poisoning are presumably coming from other sources; word of mouth, public health agencies (which often lack resources and consequently limits their ability to adequately educate the public) or not at all.

One limitation to this study was surveying a small homogeneous community where the percentage of elevated blood lead levels are relatively low compared with other segments of society. The Committee on Environmental Health (1993) reported that 7% of white children in high socioeconomic areas have elevated blood levels (>15 ug/dl) compared to 25% in poorer communities. For black children in poor communities the prevalence was 55%. It is possible that appropriate and effective lead poisoning counseling is occuring for those children who have elevated lead levels. The goal is to provide counseling before lead poisoning occurs. A second limitation was time and a limited number of respondents. The rate of return would have been greater if a study monitor was able to personally administer and collect the questionnaires.

Additional studies are warranted to continue the fight against lead poisoning. The lead knowledge test should be administered in areas where parents are not as well educated. Studies in communities where the majority of parents have a high school education or less may be beneficial in determining bow much these parents know about lead poisoning. Secondly, parents of children in communities where there is a known prevalence of elevated lead levels should be given the lead knowledge test. Thirdly, since universal screening is mandated by the State of New Jersey, studies should be done to determine if every child under the age of six is being screened and the results reported to the Department of Health. Also public agencies should find effective ways to increase parental knowledge of lead poisoning prevention and then determine whether this increased knowledge decreases the incidences of lead poisoning. And finally, researchers have established a possible connection between the reduction of blood lead levels and total caloric intake, dietary fat, protein and carbohydrates (Pediatrics, 1996, Lucas). Additional studies should be done to conclusively determine their role in lead absorption.

We must continue to identify and treat children with elevated lead levels while shifting our priorities to primary prevention, preventing exposure before it happens. The perspective that parents may be key actors in the prevention of childhood lead poisoning is important and should continue to gain support throughout both urban and suburban communities. Increasing parental awareness, along with the state and federally mandated practices to control for lead poisoning, are positive steps in reducing the numbers of children with elevated blood levels. Primary care physicians and prevention programs at the community level must step up efforts to ensure effective and appropriate parental

counseling. Parents are childrens' first caretakers and are instrumental in their health and safety.

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APPENDIX 1

Dear Parent/Caregiver,

As parents and caregivers we are constantly concerned and ultimately responsible for our children's health, safety and well-being. The Center for Disease Control has stated that lead poisoning is one of the most common yet preventable pediatric health problems today. Despite regulatory action to decrease lead in our environment and increase awareness of the health risks associated with lead, the persistence of lead poisoning remains a challenge to agencies dedicated to eradicating this disease.

As the mother of three small children and owner of an older home with a potential lead-based paint hazard, I was disturbed at how little I knew about lead poisoning. This questionnaire will help determine what parents know about lead poisoning. Your responses are important and will help determine the focus for outreach and education programs to help reduce lead exposure.

If you would like to receive a copy of the correct answers please write your name and address on this letter and I will be happy to send them to you.

Please return the completed questionnaire to the front desk.

Thank you for your participation.

Sincerely,

Debbie Reed
Seton Hall University Grad Student
MPAProgram

Please list the ages of children living in your home.

If you have a child 6 years of age or younger, please continue.

Please circle the correct answer to the following questions:

General Information

1. Lead paint chips can be poisonous when eaten.	True	False	Don't Know
2. High lead levels in the body can affect a child's ability to learn.	True	False	Don't Know
3. Most children have symptoms right away if they have an elevated blood lead level.	True	False	Don't Know
4. Apartment owners are required to tell renters about a known lead hazard in the apartment when a lease is signed.	True	False	Don't Know
5. A child's highest blood lead level generally occurs around 5 years of age.	True	False	Don't Know

Exposure

6. Lead paint is more likely to be found in newer homes than in older homes.	True	False	Don't Know
7. Living in a building during renovation/remodeling can increase child's exposure to lead.	True	False	Don't Know
8. One way for children to get lead poisoned is by having lead dust on their hands and then putting their hands in their mouths.	True	False	Don't Know
9. A child can become lead poisoned during exposure to lead-containing dust.	True	False	Don't Know

10. Some pottery imported from Mexico or other countries is not safe to use in cooking or for eating because it contains lead. True False Don't Know

11. Parents who work with lead at their jobs can bring lead home on their clothes. True False Don't Know

12. The lead a pregnant woman takes into her body can be transferred to the unborn baby. True False Don't Know

13. Lead in soil cannot harm children. True False Don't Know

14. Most cases of childhood lead poisoning are caused by drinking water that contains lead. True False Don't Know

15. Most children get lead poisoning by breathing in lead, rather than by eating or swallowing lead. True False Don't Know

16. Some herbal or traditional home remedies contain lead. True False Don't Know

Prevention

17. Washing a child's hands often helps prevent lead poisoning. True False Don't Know

18. Warm tap water usually contains less lead than cold tap water. True False Don't Know

19. Lead in water can be removed by boiling. True False Don't Know

20. Cleaning inside a home with soap and water decreases dust in the home more than dusting or sweeping. True False Don't Know

Nutrition

21. The human body needs a small amount of lead for good nutrition. True False Don't Know

22. Less lead is taken up by the body if a child eats a balanced diet, without too many fatty foods. True False Don't Know

23. A diet with a good amount of iron-containing foods will help decrease a child's chance of becoming lead poisoned. True False Don't Know

24. A diet with enough calcium helps prevent lead poisoning. True False Don't Know

Please answer the following questions:

What is your relationship to the child (children)?
Parent
Grandparent
Other caregiver

How old are you?

What is your educational background:
<12 years of schooling
High school graduate
Some college/associate degree
College graduate
Postgraduate degree

Do you own your own home?

When was your home built?
before 1950
between 1950 and 1959
built after 1960
Don't Know

How long have you resided in your home?

Have you done any remodeling/renovating in the past 6 months?

Have you received information about lead from a health care provider?

Do you know of a lead problem in your home?