

# Assessing Lead Exposure in Refugee Children: Maryland Cohort

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# Background

- Lead poisoning is associated with:
  - A decrease in cognitive development and function, especially in children.
  - Toxicity in the brain, kidneys and the cardiovascular system in both adults and children.
  - Delinquency
- Children are more vulnerable to lead toxicity than adults because they eat, drink and breathe more, in proportion to their weights compared to adults.
- CDC standard for blood lead is  $10 \mu\text{g}/\text{dl}$
- There is NO safe dose for lead.

# Background

- Blood lead levels have been steadily decreasing in US children in the last decades
- Refugee children are susceptible to lead exposure and to lead poisoning after arriving in the US primarily through household paint and through soil.
- Refugee families are predominantly low-income families that can be heavily impacted by health disparities.
- In 2000 a Sudanese child died from lead poisoning after resettlement in NH.
  - As a response the NH Health and Human Services developed lead testing guidelines to screen and monitor refugees.
  - Similar guidelines exist in other states through a CDC initiative.

# Purpose of Study

## Purpose:

- Assess the levels of blood lead in refugee children 3-6 months after arriving in the US
  - Address whether states adhere to the CDC guidelines for refugee health and prevention of lead poisoning.
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- Initiated by the Massachusetts Health Department
  - Maryland Cohort administered by the Maryland DHMH

# Procedure

- Identify eligible children and contact families
  - *Identification through information from sponsoring agencies (IRC, LIRS)*
  - *Contact via letter and phone call*
- Administer questionnaire
  - *Assesses knowledge of lead exposure and family practices related with lead exposure*
- Environmental inspection of house
  - *Assesses lead levels of house through a dust test*
- Outreach
  - *Educate families about risks of lead poisoning and methods to prevent exposure*
- Extract medical information
  - *Blood lead levels and other blood tests obtained from medical records from the children's first medical exam after arriving in the US and from follow up visits*

# Eligibility Criteria

- Refugee or other immigrant eligible for federally–mandated refugee health screening
- Completed refugee health screening
- Arrival in the US between 2005-2006 (6-18 months prior to the start of the study)
- Less than 5 years of age at time of arrival
- No previous inclusion of a sibling
- No past history of hematological disorders

# Demographics

<b>Variable</b>	<b>N=9 (%)</b>
<b>Country of origin</b>	
Uzbekistan	4 (44.4)
Azerbaijan	1 (11.1)
Nepal	1 (11.1)
Congo	1 (11.1)
Angola	1 (11.1)
Indonesia	1 (11.1)
<b>Transition Country</b>	
Russia	5 (55.5)
Ethiopia	1 (11.1)
Gabon	1 (11.1)
Malaysia	1 (11.1)
<b>Housing</b>	
First	1 (11.1)
Second	6 (66.6)
Third	2 (22.2)
<b>Parent responding</b>	
Mother	8 (88.8)
Father	1 (11.1)

# Questionnaire

<b>Question</b>	<b>True</b>	<b>False</b>	<b>Do not know</b>
<i>Children have symptoms right away if they have lead poisoning</i>	22.2%	44.4%	33.3%
<i>Lead may be found in the paint on your walls</i>	88.9 %	11.1 %	0%
<i>Lead may be found in the dust on your floor</i>	66.7%	33.3%	0%
<i>Lead in soil can not harm children</i>	66.7%	22.2%	11.1%
<i>Lead is a poison you cannot see.</i>	88.9%	11.1%	0%
<i>Lead can slow a child's normal growth and development</i>	88.9%	11.1%	0%
<i>Lead paint was used in most homes built in the U.S. before 1950</i>	11.1%	0%	88.9%
<i>Lead can be passed from a mother to her unborn child</i>	77.8%	11.1%	11.1%
<i>A blood test is the only sure way to detect lead poisoning</i>	66.7%	11.1%	22.2%



# Questionnaire - Continued

<b>Question</b>	<b>True</b>	<b>False</b>	<b>Do not know</b>
<i>Boiling water removes the lead</i>	33.3%	33.3%	33.3%
<i>Eating food with enough calcium and iron helps prevent lead poisoning</i>	44.4%	22.2%	33.3%
<i>Parents who work with lead at their jobs can bring lead home on their cloths</i>	88.9%	11.1%	0%
<i>If your landlord doesn't want to fix your apartment there is nothing you can do</i>	44.4%	33.3%	22.2%
<i>Children should never put things in their mouths except food</i>	88.9%	11.1%	0%
<i>Deleading is very expensive and most people who own a house or apartment building can't afford to have it delead.</i>	33.3%	22.2%	44.4%
<i>There are things that parents can do to help prevent lead exposure in their children</i>	88.9%	11.1%	0%

# Questionnaire - Continued

<b>Question</b>	<b>Yes</b>	<b>No</b>
<i>Have you heard of lead poisoning before today</i>	44.4%	55.6%
<i>Do you ever eat meals on the floor?</i>	22.2%	77.8%
<i>Does your child participate in the WIC food program?</i>	22.2%	77.8%
<i>Does your child take vitamins with iron?</i>	11.1%	88.9%

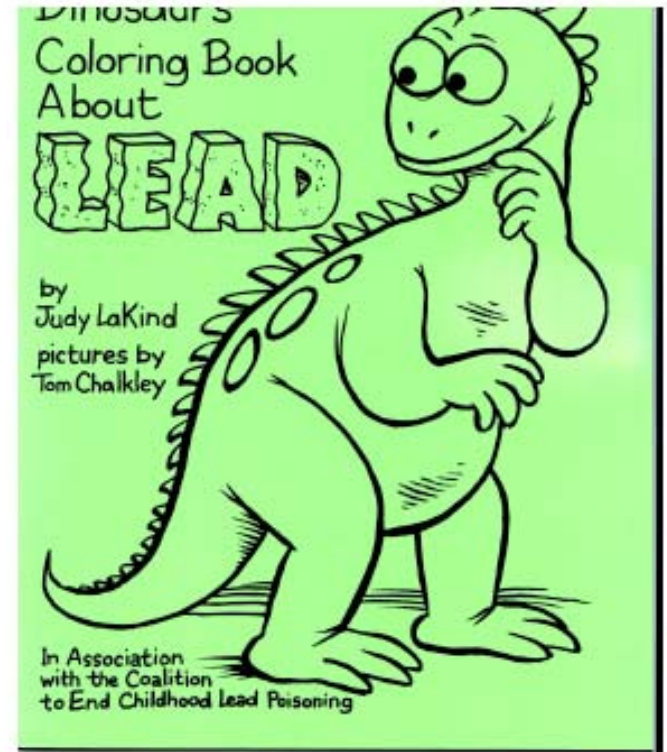
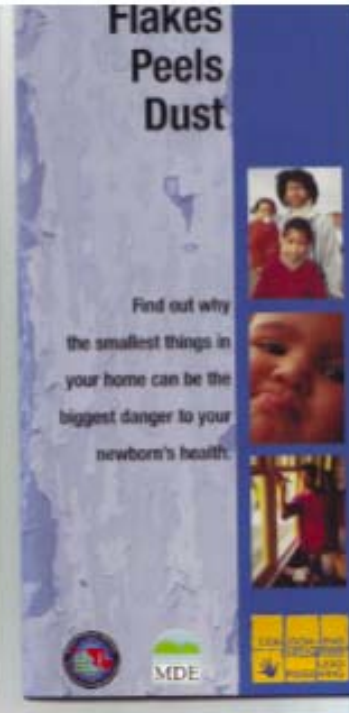
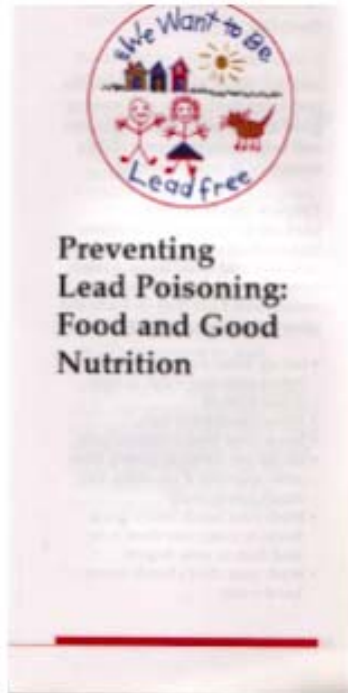
# What can you do to protect yourself or your child from lead poisoning?

- Tell landlord to repaint the house
- Leave house if there is a problem
- Prevent / Keep an eye paint from chipping
- Clean the house / remove dust
- Test for lead poisoning
- Don't let children play in the dirt

# Environmental Inspection



# Outreach



# Family Concerns

- Pests (e.g. cockroaches)
- Health insurance
- Other health/medical problems
- Health of other children in the family

# Blood Lead Levels

<b>Child</b>	<b>First test</b>	<b>Second test</b>	<b>Third test</b>
1	<3.0	<3.0	---
2	5.0	<3.0	---
3	3.0	---	---
4	<3.0	<3.0	---
5	3.0	<3.0	---
6	11.0	9.0	9.0
7	4.0	<3.0	---
8	<3.0	---	---
9	<3.0	---	---

# Study Limitations & Obstacles

- MD cohort study was delayed one year
- Refugees are not a very stable population
- Families are of low level of education and SES
- Small sample size
- Language/ Cultural Issues
- Families are from different countries-hard to make inference about practices & knowledge
- Most families moved to 2nd house- hard to make inference from lead tests and environmental inspection
- Low co-operation from health clinic and some sponsoring agencies



# Strengths

- Public Health Practice Experience
- Field Experience
- Experience working with clinic administrators, translators, environmental inspector, NGOs and non-profit organizations
- Experience working at the Department of Health

# References

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# Questions?

