Investigating Lead Levels in Refugee Children in Maryland

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Background

- Studies by Geltman, Brown, and Cochran (2001) and the New Hampshire Department of Health and Human Services (CDC, 2005) suggest that refugees have a risk on arrival and after resettlement even if blood lead levels were not of concern initially.

- Recently arrived refugees have over two times the prevalence of elevated lead levels than US-born children; 11% of the refugee children studied had elevated lead levels (Geltman, Brown, & Cochran, 2001).

- Geltman, Brown, and Cochran (2001) concluded that children from developing countries had the highest prevalence of elevated lead levels.
Dr. Paul Geltman and Katherine Eisenberg designed a retrospective cohort research study with the goal of determining the epidemiology of lead exposure in refugee children from all world regions, particularly several months after resettlement in the U.S.

The study is designed to examine associations between blood lead levels, behaviors, and origin of refugee children in addition to assessing each state’s adherence to CDC’s guidelines for lead poisoning prevention in refugee children 3-6 months after arrival.
Research Hypotheses

• Refugee children are at risk of having newly elevated blood lead levels 3-6 months after arrival.

• Refugee children from Africa are more likely to have elevated blood leave levels ($\geq 10 \mu g/dL$) than refugee children from other world regions.

• Refugee children who use traditional substances that may contain lead are more likely to have elevated blood lead levels on arrival in the United States than those who do not.
Study Flow Diagram

1. Determine Population of Eligible Children via Review of Refugee Health Screening Data
2. Contact Eligible Children’s Parents/Guardians to Obtain Consent
3. Complete Structured Interview with Parents/Guardians Who Have Given Consent
4. Complete Environmental Lead Risk Assessment in Homes of Study Participants
5. Abstract Data From State Refugee Health Database and Primary Care Physicians
Eligible Children

1. Refugee or other immigrant eligible for federally-mandated refugee health screening
2. Arrival in the United States 6-18 months prior to start of the study: June 1st, 2005-Dec 31st, 2006
3. Eligible for and completed refugee health screening
4. Age 5 years or under at time of arrival in United States
Informed Consent

• Informed Consent and Research Authorization Form
• Authorization for the Use and Disclosure of Identifiable Health Information

• Forms available in English & Russian
Home Visit

• **Lead Poisoning Prevention Interview for Families**
  – 55 multi-part questions created to evaluate potential risk factors and knowledge, attitudes, and beliefs about lead

• **Dwelling Environmental Assessment for Elevated Lead Levels and/or Lead Dust**
  – Completed by a contractor through Maryland Department of the Environment
Data Abstraction

• Baseline data will be obtained from the refugee health screening database. The data will include age, world region of origin, sex, screening dates, time since arrival, height, weight, blood lead, pathogenic intestinal parasites, and hemoglobin.

• Follow-up data will be obtain from primary care physicians. This data will include height, weight, hemoglobin, and blood lead level.
Results

• To date, one children has been enrolled successfully.

• Challenges to the enrollment process include out-of-date contact information, language barriers, and time constraints of the community health workers.
Public Health Impact

• Allow prevention and testing programs to be developed and implemented that target the needs of the refugee populations

• Increase the comprehension and understanding of behavior risk factors and cultural factors that predispose refugees to lead exposure
References
