Elevated Blood Lead Levels Among Pediatric and Pregnant Refugees Resettling in Louisville, Kentucky

Lauren Herr, Beverly Wilson, Marie Dever, Julio Ramirez, Kris Zierold, Ruth Carrico
University of Louisville, School of Medicine, Division of Infectious Diseases

ABSTRACT

Background: Elevated blood lead levels (EBLLs) are associated with adverse effects in children such as abnormal cognitive development, behavior problems, decreased intelligence, and poor school performance. CDC established a new reference level of 5µg/dl in 2012 and based on this reference level, 2.5% of US children have EBLLs. The objective of this project is to determine the blood lead levels present in refugee children and pregnant women.

Methods: Data from the Newly Arriving Refugee Surveillance System database were reviewed for refugees arriving August 2012 - August 2015. Data were categorized by blood lead level and stratified by country of origin and age.

Results: There were 74 pregnant women and 1188 children under the age of 19 from multiple countries resettled during that time frame. Of the children, 125/1388 (9%) had EBLLs of 5-9µg/dl and 14% had an EBLL ≥10µg/dl. Among the pregnant women, 1/74 (1.35%) had an EBLL of 5-9µg/dl and 1/74 (1.35%) had an EBLL ≥10µg/dl. Those from the Democratic Republic of the Congo, Bhutan, Afghanistan, Myanmar, Iraq, and Sudan represent those where EBLLs meet the CDC threshold for intervention.

Conclusions: EBLL remains a health concern for refugees arriving from multiple countries. More needs to be done with these groups to better understand the sources of exposure to lead.

INTRODUCTION

Elevated blood lead levels (EBLLs) are associated with adverse effects in children, such as abnormal cognitive development, behavior problems, decreased intelligence, and poor school performance. Young children are particularly susceptible to lead exposure due to tendency for hand-to-mouth behaviors. In 1991, the Centers for Disease Control and Prevention (CDC) established a "level of concern" for children <10 µg/dl. However, additional research has established that levels <10 µg/dl are detrimental to children's development. Thus, in 2012, the CDC established a new reference level of 5 µg/dl. Based on this new reference level, 2.5% of U.S. children have EBLLs.

METHODS

The objective of this project is to determine the blood lead levels present in refugee children aged <19 years old and pregnant women.

OBJECTIVES

- Data from the Newly Arriving Refugee Surveillance System (NARSS) database were reviewed for refugees arriving August 2012 - August 2015.
- Data were categorized by blood lead level and stratified by country of origin and age.

RESULTS

Between August 2012 and August 2015, there were 74 pregnant women and 1403 children under the age of 19 from multiple countries resettled in Kentucky. Of the children, 86/1403 (6%) had EBLLs of 5-9µg/dl and 13% had an EBLL ≥10µg/dl. Among the pregnant women, 1/74 (1.35%) had an EBLL of 5-9µg/dl and 1/74 (1.35%) had an EBLL ≥10µg/dl.

CONCLUSIONS

EBLLs remain a health concern for refugees. More research is needed to better understand the sources of exposure to lead and it's effects on refugee children. Future research should focus on those <18 years of age. Further investigation into gender differences in exposure levels should also be considered to determine if this is accurate outside of the U.S. refugee population.

REFERENCES