

Preventing Harm on Arrival: Lead Prevention in Newly Resettled Pediatric Refugees

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Lead is a neurotoxin at low levels, and its effect on a child's brain is not reversible.¹ Given that there are no effective treatments to reverse the neurodevelopmental effects of elevated blood lead levels (EBLLs), prevention must be the primary strategy.² EBLLs are twice as likely to be seen in newly arrived refugee children when compared with US-born children and may be particularly high in subpopulations of refugee children related to country of departure.^{3,4} Lead has a half-life of 35 days⁵; therefore, lead levels should fall at retesting of refugees 3 to 6 months after arrival in the United States. Pezzi et al's⁴ "Blood Lead Levels Among Resettled Refugee Children in Select US States, 2010–2014" confirms EBLLs as a result of overseas exposures yet found that 10% of children, resettled in Colorado, Illinois, Indiana, Minnesota, and New York, with normal initial lead screen results had increased blood lead levels (BLLs) 3 to 6 months postresettlement. These findings support studies done in New Hampshire and Massachusetts that revealed that 6% to 29% of refugee children with normal BLLs on arrival had an increase in BLLs postresettlement, highlighting the lead exposure occurring in the United States.^{3,6} Of note, Pezzi et al⁴ found postarrival EBLLs not only in young children but also in older children and teenagers.

On arrival in the United States, refugee children face lead hazards.

Resettlement agencies place refugee families in affordable, older housing that puts children at risk for lead exposure through lead dust, lead-contaminated soil, and lead pipes.⁷ However, lead risks among refugee children may differ from the typical US exposures. Refugee families may, by custom, eat on the floor, increasing potential lead ingestion.⁸ Families may have brought lead-containing cookware, cosmetics, and toys with them from overseas.^{9–12} Thanaka (a Burmese cosmetic) and Daw Thay (a traditional ethnic digestive remedy) have been associated with EBLLs in Burmese children resettled in Indiana.¹³ Ayurvedic medicines (imported Asian spices and cultural powders, such as sindoor) may cause EBLL.^{14–19} These and other products may be imported and sold in US ethnic markets.

Primary prevention of lead exposure should be the focus on arrival in the United States.²⁰ Resettlement agency staff who are responsible for housing placement must be educated on the risks of lead to children. The Centers for Disease Control and Prevention (CDC) Lead Poisoning Prevention in Newly Arrived Refugee Children Tool Kit includes training materials for resettlement workers as well as medical providers.^{8,21} Resettlement agencies need to prioritize lead-free housing, and workers can connect landlords to lead-abatement programs before the placement of newly arrived refugees.

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Throughout the United States, public health clinics most often perform the postarrival medical screening and then refer refugee children to community medical providers. Coordination between public health departments, resettlement agencies, and medical homes can be challenging, and the transfer of information may be incomplete and impaired. Refugee families may not be informed of EBLL test results and may not understand the need for relaying lead results to their providers or the need for repeat testing. Coordinated system-level communication strategies are necessary.

Primary care providers have varying levels of experience in caring for refugee children and varying understanding of refugee lead rescreening and prevention recommendations.^{22,23} The CDC recommends that all newly arrived refugee children <60 months old be prescribed a multivitamin with iron; however, insurance coverage for multivitamins can be a barrier. The iron, calcium, and zinc contained in the multivitamin reduce lead absorption and, along with access to nutritional support programs, are an important lead poisoning-prevention strategy.^{24–26} Pezzi et al⁴ found that EBLLs were associated with moderate-to-severe anemia. Anemia is prevalent in refugee children and can enhance lead absorption such that even minimal lead exposures pose high risk.^{6,27} Treatment of iron deficiency anemia decreases gastrointestinal absorption of lead and pica behaviors.⁵

Lead safety education can be challenging given the large volume of anticipatory guidance and health literacy barriers. A subpopulation-specific understanding of potential lead exposures helps the clinician tailor lead-prevention teaching. General teaching can focus on hand-washing before eating, not mouthing objects, and the risk of lead in

traditional medicines and cosmetics. Caregiver education can be reinforced through handouts and video materials available from the Vermont Department of Health and Health Reach.^{21,28,29}

Lead poisoning prevention requires prioritization at all levels of the resettlement process. Education of refugee families overseas and on resettlement must be accomplished with the goal of minimizing lead exposure. Resettlement agencies must be aware of lead risks in housing placement and work to mitigate placement exposure. Physicians caring for refugee children must know the CDC recommendations for lead and anemia screening, prescribe a multivitamin with iron to refugee children 6 months to 6 years old, and provide lead-related anticipatory guidance. Through awareness, coordination, medical care, and advocacy, resettled refugee children can be protected from harmful lead exposure.

ABBREVIATIONS

BLL: blood lead level
 CDC: Centers for Disease Control and Prevention
 EBLL: elevated blood lead level

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