SJ PH

Addressing Lead Exposure Among Foreign-Born Youth in Baltimore City Through Social Policy

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How a nation upholds the well-being of its vulnerable populations takes precedence in outlining the foundation of general welfare for society as a whole. Both age and immigrant status are characteristics that indicate the vulnerability of an individual.[1,2] Considering the large and growing population in Maryland of immigrants, refugees, and other displaced persons, this paper addresses the sources of vulnerability and the mechanisms that construct a disproportionate risk of negative health and social outcomes for individuals at the intersection of these subpopulations: foreign-born youth ages five through nineteen residing and attending schools in Baltimore City.[3]

Children of immigration, displacement, and refuge not only have greater biological and social sensitivities to environmental exposures and familial circumstances, respectively, but they also (1) bring prior exposures and experiences unique to their backgrounds, and (2) face barriers in assimilation that may compete with their past and are exclusive to their experience as minors. Factors within these outstanding categories aggregate and precipitate as an array of physical, psychological, and social burdens.[4] Health profiles of refugee children in the nation reveal elevated blood levels (EBLs) as a major concern for individuals from major countries of departure, which compounds the issues of lead already found in Baltimore.[5,6] Evidence thus draws attention to environmental health among foreign-born youth as a concern that should be prioritized for policy intervention.

Children who have immigrated to Baltimore City, whether by choice or by necessity, are shown to endure disproportionate burden by toxic environmental exposures and psychological distress. According to the Agencya for Toxic Substances and Disease Registry, low levels of lead exposure in children are evidenced to affect neurodevelopment such that no dose is safe; these biological changes are expressed as a reduced growth rate, which causes problems in learning, hearing, speech, behavior, and downstream academic achievement.[7,8] Coupled with the sensitive, immature biology and the unique behaviors of children, who have (a) intake patterns greater than that of the average American adult (drinking more water, breathing more air, and eating more pounds of food per pound of body weight) and (b) social and play patterns prolonging confrontation with environmental elements, lead exposure presents a significant burden on children, especially for the foreign-born immigrating with previous exposure to lead.[1] Lifelong effects of childhood exposure to lead have thus been justifiably linked to a seven-fold increase in dropout rates, higher poverty rates, and criminality in adulthood.[10] Further consideration of psychological traits that arise from childhood lead exposure, such as aggressive behavior, paired with the psychological stressors of immigration substantiates the ideas behind vulnerability among foreign-born youth and the mechanisms leading to disproportionate risk.[4,10]

Considering that the advantages of addressing these vulnerabilities extends to greater populations of Baltimore City, the burdens imparted by intervention are assuredly outweighed. Policies targeted at reducing lead exposure among youth in the city would benefit a greater range of vulnerable populations, including the one in six children found to have EBLs in Baltimore and biologically vulnerable women of reproductive age, mitigating not only physical health concerns but also psychological stressors and the social issues that emerge.[6,9] Historically, efforts to reduce lead exposure, such as the removal of lead from gasoline by the Clean Air Act, have directly (1) prevented the development of cognitive deficits associated with aggressive and impulsive behaviors such that legislation was also responsible for a majority of the decline in violent crime, and (2) restored intelligence quotients (IQ) by 2.8–4.9 IQ points, raising worker productivity by 4.9–11.7%, and yielding an economic benefit from $110–319B, thus empowering the overall population.[7,10]

Maryland Department of Education may establish a blood sampling requirement for all new students entering the Baltimore City Public School system to determine pre-existing lead concentrations. By having newly-arrived children test their blood lead levels and report the values, attention would be brought to

the health implications of lead exposure, conferring caution regarding exposure and ultimately deterring further accrual of lead, especially among foreign-born youth. Additionally, institutions would not only receive novel data associating blood lead levels with location of departure, revealing detailed trends between local and foreign-born populations, but also adopt greater awareness of developmental challenges among children with EBLs, promoting adjustment of education and counseling to better suit affected groups.

Baltimore City Public Schools may also call for regular lead screening of drinking water to safeguard youth from further negative impact. By (1) testing water in fountains and sinks in schools for lead at stricter levels than nationally enforced, and (2) requiring them to display informative signs should elevated levels be detected until addressed within a certain period of time, foreign-born youth would avoid accumulating more exposure than allowed for an individual born in the country, and the displays would deter immigrant parents and refugee case managers from enrolling children at the institutions until adequate filtration is installed.

Maryland State legislation may facilitate the financing of lead abatement on the basis of financial accountability. Considering that lead hazards found within building infrastructures such as lead paint were utilized until the nationwide ban in 1978 by manufacturing agencies such as Sherwin-Williams, a major industrial entity in Baltimore City, liability may be attributed to these companies.[11] Requiring lead paint manufacturers to finance a lead restitution fund for municipal renovations and preventative intervention, part of which would be allocated for foreign-born youth, would remove financial barriers and promote lead exposure reduction.

Baltimore City Public Schools should enact district policy requiring regular tests of drinking water with stringent standards and the requirement that signs are to be prominently displayed at locations of any hazard until tests show insignificant levels of lead. Screenings of newly-arrived children would yield beneficial data, but intervention would be reliant on institutional changes in educational methodology with barriers that may render the policy ineffective, especially considering that damages from lead would have already been committed. Although resources may be allocated to abatement of lead hazards, specifically by requiring lead paint agencies to contribute to funds financing intervention, it is difficult to retroactively establish liability of lead paint to a specific entity, and the capital garnered by such policy would be outweighed by economic returns obtained by efforts targeting prevention. Holding schools accountable for lead in drinking water at a standard higher than that held nationally takes prior lead exposure of foreign-born youth into consideration and empowers them with both a better understanding of the toxin and the ability to make informed decisions regarding exposure at their chosen school. Altogether, this prevents further accrual of lead and its negative health outcomes and promotes a positive social narrative and institutional attribution of developmental challenges.

School officials may suggest that labeling lead-tainted water would financially burden and inconvenience them to outsource services, as has occurred due to extreme levels in many Baltimore City schools that now spend ~$500K yearly on bottled water in addition to outsourced lunch.[12] Considering that these efforts are reported to detract from education and that preventative measures have a return of $17 to $220 for every dollar invested, the effective course of action as a result of this policy would be to renovate water outputs with filters, which have a yearly cost less than that of bottled water.[13,14]

Implementation of school-wide policy addressing lead exposure among foreign-born youth is contingent upon not only political sentiment towards both immigration/refugees and the environment but also stakeholder concern and support for the primary source of vulnerabilities (lead exposure) and the disproportionately affected population. Attitudes toward immigration translate into public backing of any policy targeted to benefit foreign-born individuals; should sentiment remain isolationist or anti-immigration, the recommended policy would face greater barriers to pass and effectively implement. Additionally, separate from the national sentiment towards non-U.S. citizens, attitudes towards the gravity of environmental considerations such as lead exposure and its downstream effects are a major factor of policy implementation. Should there be limited concern for the environment, perhaps as a result of limited public awareness of risk attributable to lead, even full public support for the vulnerabilities among foreign-born youth may prioritize other sources of

vulnerability and side-step the outstanding issue of lead exposure. Ultimately, the effectiveness and success of policy implementation relies on support from the schools themselves; as major stakeholders in this recommendation, they're not only at liberty to divert attention to other vulnerabilities within the education system, but also, even upon implementation, schools must take initiative upon the identification of non-compliance (demonstrated lead in drinking water) and act as intended by both installing filters and/or replacing lead piping and acknowledging the significant adverse health and social effects of lead exposure as an institution.

Successful intervention targeting the adverse health and social outcomes of lead exposure among foreign-born youth should consider collaboration between (a) local, state, and federal agencies and philanthropic organizations, (b) state and federal health agencies and insurance programs, and (c) schools and the parents of lead-poisoned children. Schools that participate in the National School Lunch (NSLP) and Child and Adult Care Food (CACFP) programs must provide children with free potable water as a requirement of the Healthy, Hunger-Free Kids Act, overseen by the U.S. Department of Agriculture. Both federal and state government agencies such as the U.S. Departments of Health and Human Services (HHS) and Education and the Maryland State Department of Education would organize a task force to regularly test and enforce compliance of screening policy. Baltimore City Health Department, Maryland Health Care Commission, and other health agencies would coordinate with Baltimore City Public Schools as well as Medicaid and the Children's Health Insurance Program to provide financial resources facilitating the testing and reporting of lead levels as required by the proposed policy. Concurrent with the screening policy, schools would ideally provide targeted academic and behavioral interventions to lead-exposed children to decrease the likelihood of the vulnerable population engaging in destructive practices and increase chances of earning a high school diploma. Assessment of psychological and developmental needs may be facilitated by the Centers for Medicaid and Medicare Services and education and care programs may be financed by HHS as well as federal and state departments of education. If given the structural and financial resources to execute the recommended policy, such a program's overall success may be measured in the short-term by reduction of schools with lead-contaminated water and in the long-term by the attributable increase in academic performance (e.g. improved standardized test scores, higher graduation rates).

Baltimore City Public Schools may both implement the regular testing policy and provide the means necessary for its implementation, but additional policy measures are necessary to improve adverse health and social outcomes among foreign-born youth in the context of lead exposure. First, housing policy encouraging the removal of lead from infrastructure carrying drinking water to urban residences, which are disproportionate to low-income families, especially those with foreign-born children, would target another major origin of lead risk for youth. By identifying and remediating these lead-containing pipelines that service low-income homes built before the ban on lead in construction, the acting policy would facilitate the reduction of a significant source of lead and the downstream health and social outcomes. Second, educational policy may facilitate access to education and care programs, financed by the HHS and U.S. Department of Education, that utilize an evidence-based approach for academic and behavioral intervention targeted towards children with EBLs. Consideration of the developmental challenges of children with EBLs, especially among foreign-born youth who may need additional specialized attention, would circumvent unjustified attribution of negative performance to the individual as opposed to environmental predisposition. Third, nutritional policy may expand upon the services provided by U.S. Department of Agriculture food programs such as National School Lunch Program and the Supplemental Nutrition Assistance Program such that beneficiaries of nutrition-related services also receive advice concerning lead reduction in the home; within experimental implementation, children in the intervention group exhibited improved educational achievement and reduced antisocial behavior.[15] Considering that these additional policy measures target a major source of vulnerability systematically, provide equity to those already made vulnerable through education, and avoid further vulnerability through behavior change, the primary policy recommendation is only a stepping stone in upholding health and general welfare among foreign-born youth in Baltimore City and beyond.

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