

An Analysis of the Border Health Infrastructure in Relation to Childhood Lead Toxicity Levels Along the U.S. and Mexico Border

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Problem Statement:

Childhood lead exposure is a border health priority in the United States. In Mexico the lack of screening and research on childhood lead exposure has made it difficult to understand the true prevalence of elevated Blood Lead Levels (BLLs) in children. Mexico has not identified childhood lead exposure as a priority for border activities. Binational interventions are necessary in fluid border communities; yet the development of effective interventions is affected by lack of funding, scarce data collection, poorly prepared local workforce, and lack of culturally competent educational tools.

Objectives:

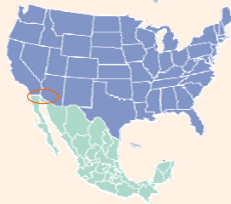
Outcome Objective: By December 2010 100 % of all cases of elevated BLLs in children from 1 to 6 years of age will be eliminated in the U.S.-Mexico Border region.

Process Objective: By January 2008, assess how the 10 essential environmental public health services are being provided with respect to childhood lead poisoning in the US-Mexico border region.

Materials and Methods:

A literature review was conducted to assess rates of elevated blood lead levels and lead exposure in binational children, examine regulations of lead sources and exposures in the U.S. and Mexico, and identify previous research and data. A questionnaire based on the 10 Essential Services of Environmental Public Health and Pan-American Health Organization's Spanish equivalent was developed to assess the strengths and weaknesses related to border childhood lead poisoning. Three interviews were conducted with lead stakeholders from Imperial County, California, Arizona, and Baja California, Mexico. A system's thinking approach was used to analyze findings from the literature review and interviews and to create archetypes to illustrate different elements of the issue. A logic model was developed to present the short and long term outcomes and impact objectives.

What's been happening?



Federal Level

U.S.

- Approximately 310,000 U.S. children ages 1 to 6 have elevated BLLs.
- Only high risk U.S. children tested.
- Elevated BLLs in New Mexican children prompted investigations by the US-Mexico Border Health Commission
- Stricter Best Manufacturing Practices instituted.

Mexico

- In 2001, Mexico created the Commission for Protection Against Sanitary Risks (COFEPRIS) to regulate, monitor, and evaluate sanitary risks.
- COFEPRIS identified chronic exposure from consumables, such as lead in candy as a health risk in 2003.
- No screening and little education for lead exposures.
- No standard of testing BLLs for children.

U.S.- Mexico Border Level

U.S.

- Increase in number of testing/rates are same.
- No standard for outreach and intervention activities.
- Interest for border project development not resonant with Mexican border health authorities.

Mexico

- No Mexican federal entity collecting lead statistics in Mexican border children or actively collaborating with the U.S.
- Study in Tijuana, B.C. found high BLLs associated with use of ceramics.
- Limited number of studies conducted.
- No funding for border projects.

Local Level (Border Counties)

U.S.

- California/Arizona have limited resources.
- Poorly defined roles between local stakeholders.
- Dependency on state resources to implement local environmental lead assessments.
- Limits in local regulation practices.

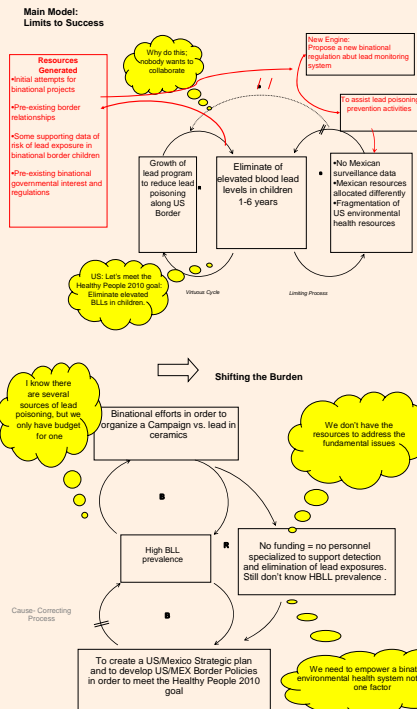
Mexico

- Priority of other health issues, i.e. Vaccine Preventable Illnesses.
- No collaboration in detection between U.S. and Mexican states.
- Limits in local regulation practices.

Determinants

- Use of ceramics that contain lead when preparing meals.
- Consumption of candies and/or candies with wrappers that contain lead.
- The use of home remedies with high content of lead.
- Lack of knowledge about BLL prevalence in U.S.-Mexico Border region.
- Lack of knowledge about safe lead thresholds.

What is its problem structure?



How are the 10 Essential Services of Environmental Health provided?

Monitor

California has not seen a high number of lead cases, lead is not a main priority as all possible exposures are unknown and there is no monitoring of regulations to reduce lead exposures such as the case with building codes or for manufacturers (lead, candy, toys, etc.).

In Arizona lead is not a high priority for border health providers. The most significant exposures identified were from paint, pottery and folk remedies. Secondary exposures were take-home exposures, such as hobbies, toys, and candy. There is a very low rate of screening for lead in children.

Mexico does not consider lead as a priority in children as there is a lack of prevalence data. Conducting a study to identify BLLs in children requires sufficient resources; therefore, evidence of sufficient lead poisoning must be established before a study can be justified.

Diagnose and Investigate

In Imperial County, California case investigations are only conducted once there is a report of a high BLL. In Imperial County there is no equipment available for source testing soil, paint or objects.

Arizona environmental health professionals screen for high blood lead levels and conduct investigations to identify positive sources of lead in paint, soil, water, dust, pottery, food, toys, etc. Care givers complete a questionnaire to identify possible sources of exposure.

Most of the monitoring activities in Mexico consist of a national education program that educates ceramic producers on firing techniques to obtain lead safe products.

Inform and Educate

In Imperial County, California, program materials are in English and Spanish and public service announcements are published via billboard and radio. Public service announcements are used to disseminate information to the general public.

The Arizona general population has a moderate level of awareness about lead hazards and exposures. From 1 to 10 (10 as greatest) public knowledge is about a 7 and the quality of methods of outreach is between 8 and 9.

In Mexico there are few health promotion activities in schools and communities related to lead exposure.

Assure Competent Healthcare Workforce

California (Imperial County) reported limited resources with the local Environmental Health Department and not having trained personnel for detection of lead sources. Imperial County staff believes there are enough culturally competent employees.

Arizona reports that local agencies and health departments do not have adequate training or sufficient personnel. Some counties are more equipped since they have a lead hazard control program. People do not like the state to intervene or provide support besides having the resources to help.

Mexico reports not having specialized personnel that work in lead, most employees are not lead specialists but work with other environmental risks as well.

Research

California (Imperial County) is not aware of any local stakeholders conducting lead research. Personnel state that, "there is a need for stricter regulations of foreign products that enter the country."

Arizona expressed that as research develops, new guidelines are published and are recommended for adoption, but the greatest barrier is data availability. There is not enough data to show it is a problem especially the level it takes to create concern and the number of children with elevated BLLs to show that it should be a priority.

Mexico states the only research that is conducted is case investigation, but no collaboration exists to conduct research since, "we are aware that if we begin to investigate then we will encounter many cases". The health system only justifies funds for a problem, but first there has to be scientific evidence.

Next Steps:

- Present findings to local, state and binational partners identified during the lead interviews.
- Facilitate stakeholders to develop and present possible bi-national strategies in order to eradicate lead exposures among children along the U.S./Mexico Border using both nation's national goals and health systems frameworks.
- Promote research and data collection in the United States and Mexico on the prevalence and sources of lead exposure in binational border children.
- Increase the number of professionals from both nations trained to investigate the environments of children with elevated BLLs.

Expected Outcomes

To meet the following impact objectives:

- By June 2009, findings will support the development of a bi-national childhood lead program in U.S.-Mexico border cities.
- By December 2010, educational efforts will decrease the use of ceramics that contain lead for consumable products by 100%
- By December 2010, educational efforts will decrease the consumption of candies that contain lead or have lead in their wrappers by 100%.



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