

QIDS

Quality Improvement Demonstration Study

A DOH-PhilHealth-UCSF-UPecon Partnership

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Lead exposure among Visayan children: An Unanticipated Finding of QIDS

Research from the QIDS project has uncovered a major problem of lead exposure in the Visayas and perhaps the whole of the Philippines. At the time when the QIDS data collection activities were being planned, we recognized that lead blood levels would be important to assess because of our interest in the impact of health policy on the cognitive development. Elevated blood lead levels are widely recognized to interfere with normal cognitive development in children and thus lead needed to be measured in our study to distinguish between the effects of ineffective policy and an environmental exposure. We had not anticipated, however, that this would be an important finding from our baseline surveys. As so often as is the case in research, the unexpected becomes important and lead exposure is a serious health issue for children under 5.

In QIDS we found that roughly one-third of our randomly sampled children had elevated blood lead levels. Using levels defined by the US Center for Disease Control, the maximum allowable cut off is 10ug/ml. We also found that variations across regions and provinces were wide (see Table 1). Biliran and Leyte Province in Region 8 had the highest incidence of elevated blood levels (over 40 percent) while Siquijor and Negros Occidental had the lowest (less than 20 percent).

In an attempt to identify possible sources of lead exposure, we searched for a private donor so that we could undertake a limited qualitative study. Once funded by a generous grant from Dr. James Strand, we returned to a selection of homes where elevated blood lead levels had been found. Households were re-interviewed about exposures; we also performed environmental tests on paint, dust, water, soil and other potential sources found in the household and

beyond (e.g., schools and hospitals) were performed.

This qualitative investigation revealed multiple sources of lead contamination that may have exposed the children. Lead was identified in paint, including houses with very little painted surface at all, fishing weights, gasoline, canned tuna, and an association between municipal water source and living near a highway. Importantly, we did not find a single or even a predominant source of the lead exposure from these preliminary data. One conclusion is that there are multiple sources and a more systematic evaluation is needed to isolate the source in different regions and among different children. What immediate steps can policymakers do about this potential long-term health problem?

Encourage blood lead screening. Blood lead testing, now standard practice in developed countries that have identified problems of elevated blood lead levels, is rare in developing countries. This is because of the expense and because some of the most common causes of exposure in the developed world today – such as old paint, are not so common in the settings of the developing world. This study shows that the potential exposure sources are multiple and include common objects in traditional households, such as fishing weights. Blood lead screening could be done on a sample basis at first to determine the extent of the problem in areas outside of the Visayas and the persistence of the problem within the Visayas. Continued blood screening would raise awareness of the issue and identify target populations for key education messages.

Educate the public about the dangers of childhood lead toxicity; promote folate-rich diets. Although treatment of severe lead toxicity

is expensive and out of reach of all but the wealthiest of Filipinos, basic prevention is not and these messages can be spread to all. Key points including keeping potential exposure sources away from children and focusing on nutritional advice to reduce vulnerability can greatly reduce the population at risk. Additional statistical analysis performed by the study team suggests that a folate-rich diet may mitigate the potential adverse effects of elevated blood levels on a child's mental development. Widely available sources of folate include leafy, green vegetables and citrus fruits.

Monitor industry and regulate lead content.

Just as lead was removed from gasoline in the 1990s so also should strict regulations be passed and enforced for the contents of paint, the disposal of auto batteries, and the disposal of mining waste to name just a few examples.

Disseminate the findings widely. Involving the national media and the international scientific community will increase awareness, attract resources and influence the behavior of parents, doctors and nurses, and the general policy community. Increased awareness is essential to advancing preventive public health measures.

Table 1. Proportion of Children with Normal Blood Lead Levels, by province

PROVINCE	Number of Children	% of Children <10 (Normal)
Capiz	143	61.54
Iloilo	142	76.06
Negros Occidental	150	82
Bohol	134	59.7
Cebu	151	68.21
Negros Oriental	140	58.57
Siquijor	47	85.11
Camiguin	49	75.51
Biliran	49	53.06
Leyte	264	57.2
Eastern Samar	151	65
ALL	1,389	65.95

The Quality Improvement Demonstration Study (QIDS), which is jointly being undertaken by the Department of Health (DOH), Philippine Health Insurance Corporation (PhilHealth), University of California San Francisco (UCSF), and the UPecon Foundation, attempts to evaluate policy interventions implemented under the DOH Health Sector Reform Agenda. QIDS is funded by the US National Institutes for Health and PhilHealth.

Specifically, QIDS evaluates the impacts of three policy interventions of interest to PhilHealth: expanding access to PhilHealth benefits for the most vulnerable populations (Intervention A); targeting bonuses for high quality care that leads to better health outcomes (Intervention B); and the current benefit program. In the QIDS project, these three interventions were randomly assigned to 30 district hospitals in the Visayas and Camiguin. To determine which intervention results in the greatest health benefits, QIDS is carrying out evaluations at baseline, every quarter and at the end-of-project. There are surveys of hospitals, physicians, exiting patients, patient follow home and random households.

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