Evaluation of the Childhood Blood Lead Screening Component of the Southern Nevada Childhood Lead Poisoning Prevention Program

Melissa J. Breunig, BS1 and Shawn Gerstenberger, PhD1
1University of Nevada – Las Vegas, School of Community Health Sciences, Department of Environmental and Occupational Health

INTRODUCTION

With almost half a million children under five years reported to have elevated blood lead levels in the United States, lead poisoning remains a major health concern, despite advances in policy and prevention programs.1 Traditional sources of childhood exposure have been identified as lead-based paint, dust, soil, plumbing solder, and leaded fuel; numerous regulatory policies have been implemented to reduce these exposures.2 Even with these policies in place, lead poisoning is still affecting children and can have detrimental effects on their development.3 In fact, lead poisoning has been identified by the CDC as the primary preventable environmental health threat to children in the United States.

Children under the age of six are especially vulnerable to lead exposure due to their frequent hand-to-mouth behaviors.4 Even low dose lead exposure can lead to poor performance in school, lower IQ, attention deficits, and juvenile delinquency, which is why the Centers for Disease Control and Prevention (CDC) had previously set a reference level for blood lead level at 10 µg/dL, but lowered it to 5 µg/dL in 2010.1,4 After 2010, any blood lead level greater than or equal to 5 µg/dL is considered an elevated blood lead level (EBLL).2 According to the CDC report on low level lead exposure in children, there was an estimated 450,000 children, ages one to five years old, that had blood lead levels ≥2 µg/dL, as of January 2012.5 While this is a dramatic reduction from blood lead levels in the past, the CDC was unable to achieve the Healthy People 2010 goal of eliminating elevated blood levels in children, and includes this goal in the Health People 2020 recommendations.

National and state programs have been implemented to eliminate childhood lead poisoning, but each state has been functioning at a different level. In July 2006, the Southern Nevada Health District (SNHD) in collaboration with University of Nevada Las Vegas (UNLV) School of Public Health Sciences (ISCHS) created a new program; funded through the CDC, to better understand the elimination and prevention of childhood lead poisoning called the Childhood Lead Poisoning Prevention Program (CLPPP).

OBJECTIVE

The objective of this paper is to highlight the progress of the lead poisoning prevention program in Southern Nevada. Specifically, we present blood lead screening results for Clark County, Nevada from 2006 through 2011, and review the progress recommendations made by Rothwell et al. for Nevada in 2007.7

METHODS

The evaluation is based on mandatory reporting of all childhood positive blood lead level (BLL) data and followed the CDC reference level of 10 µg/dL.6,7 BLL are reported to the NHHD based on the 2006 Nevada State Board of Health regulation allowing SNHD the authority to investigate each blood lead levels >5 µg/dL, but lowered it to 5 µg/dL in 2010.5 After 2010, any blood lead level greater than or equal to 5 µg/dL is considered an elevated blood lead level (EBLL).2 According to the CDC report on low level lead exposure in children, there was an estimated 450,000 children, ages one to five years old, that had blood lead levels ≥2 µg/dL, as of January 2012.5 While this is a dramatic reduction from blood lead levels in the past, the CDC was unable to achieve the Healthy People 2010 goal of eliminating elevated blood levels in children, and includes this goal in the Health People 2020 recommendations.

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RESULTS (continued)

Table 3. Blood lead levels were also classified by sex: see (Figure 4) for breakdown of sex per Project year of CLPPP by detectable BLL categories of ≤0 µg/dL, >0 µg/dL, ≥5 µg/dL, ≤10 µg/dL, >10 µg/dL.

<table>
<thead>
<tr>
<th>Project Year</th>
<th>Children under six years old screened</th>
<th>5-8 µg/dL</th>
<th>&gt;5 µg/dL</th>
<th>≤10 µg/dL</th>
<th>&gt;10 µg/dL</th>
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</thead>
<tbody>
<tr>
<td>2006-2007</td>
<td>127</td>
<td>14</td>
<td>104</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>2007-2008</td>
<td>136</td>
<td>14</td>
<td>122</td>
<td>14</td>
<td>7</td>
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<tr>
<td>2008-2009</td>
<td>218</td>
<td>14</td>
<td>198</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>2009-2010</td>
<td>204</td>
<td>14</td>
<td>190</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>2010-2011</td>
<td>67</td>
<td>14</td>
<td>53</td>
<td>13</td>
<td>10</td>
</tr>
</tbody>
</table>

DISCUSSION

The CLPPP has provided the foundation for Nevada to systematically address childhood lead poisoning for the first time in the state’s history. As CLPPP developed over five-five year tenures, screening rates and surveillance numbers dramatically increased an average of three fold over the project. However, Project Year I’s – IV only screened respectively 6.2%, 6.9%, 7.6%, 7.9%, and 6.2% of the all children under five years old according to the 2010 Census data or 4,486 children, approximately 13% of the total population of NV. This means Nevada needs to continue promoting BLL screening in order to reach more of the target population, despite improvements in percentage screened over the CLPPP.

The drastic screening increases during project year I were aided by the Southern Nevada District Board of Health, which passed local regulations mandating laboratories and medical personnel to report cases of BLL to the health authority. Then in project year II, a legislative effort was made on the state level to introduce Assembly Bill 219, which mandated reporting of all blood lead testing results conducted on children to the appropriate health authority in accordance with regulations adopted by the State Board of Health.

Through the continuation of screening programs, prevention, case management of EBLL children, and support of legislation, Nevada can continue to make considerable advances in the elimination of childhood lead poisoning. The transition from CLPPP into the healthy homes program provides the opportunity to expand the percentage of children under six screened, address the home as a critical determinant of health, and to more accurately report data to better achieve the goal of eliminating childhood lead poisoning.

REFERENCES