UNDERSTANDING LEAD POISONING IN BALTIMORE: BRIEF SUMMARY OF FIRST WORKSHOP

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10 November 2016
CONCLUSIONS ABOUT HEALTH EFFECTS OF LEAD IN CHILDREN

- Lead levels and consequential effects have decreased over the past 40 years due to successful public health measures.

- There is no acceptable lead level in children.

- Accumulating data shows levels below 10µg/dL adversely affect many organ systems system.
Health effects of lead are likely irreversible and there is no effective treatment so we need primary prevention that focuses on reducing exposures BEFORE a child is identified as having an elevated lead level.
Maryland and CDC’s New Lead Reference Value: 5µg/dL

- 5µg/dL = 0.5% of US population of children

- In Baltimore, 3.9% of children tested in 2014 had new BLL of 5-9µg/dL (N = 708)

- In Maryland counties, 1.0% of children tested in 2014 had new BLL of 5-9µg/dL (N = 899)
Environmental Sources of Childhood Lead Exposure

- Cosmetics – Kohl, surma
- Medicinals
- Metal charms, jewelry
- Toys
- Candy

Baltimore’s rental stock:
41,872 properties built before 1950
7,365 properties built 1950-78

Cigarettes
Occupational exposures of parents
Lead-Free Maryland Kids Campaign
March 2016: New Lead Testing Regulations

• All areas in MD should be considered “At Risk”
• Change affects children born ON OR AFTER January 1, 2015
• Children born BEFORE January 1, 2015 will not be affected
  – Still use 2004 Targeting Plan (all children on Medicaid, living in 2004 at risk areas, or risk factors for lead exposure)
• Revised Point of Care Testing Regulations: Makes it easier to do point of care testing for CLIA-waived tests
Table 1: Guidelines for Blood Lead Level Testing in Children 6 Months to 72 Months of Age
(COMAR 10.11.04, as of 3/28/2016)

For ALL children born on or after 1/1/15, OR on Medicaid, OR ever lived in a 2004 At-Risk Zip code*

<table>
<thead>
<tr>
<th>Age</th>
<th>6 Months</th>
<th>9 Months</th>
<th>12 Months</th>
<th>15 Months</th>
<th>18 Months</th>
<th>24 Months</th>
<th>30 Months</th>
<th>36 Months</th>
<th>48 Months</th>
<th>60 Months</th>
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</thead>
<tbody>
<tr>
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<td>Screen</td>
</tr>
<tr>
<td>Test if indicated</td>
<td>Test if indicated</td>
<td>Test Blood Lead Level</td>
<td>Test if indicated</td>
<td>Test if indicated</td>
<td>Test Blood Lead Level</td>
<td>Test if indicated</td>
<td>Test if indicated</td>
<td>Test if indicated</td>
<td>Test if indicated</td>
<td>Test if indicated</td>
</tr>
</tbody>
</table>

For children born before 1/1/15, AND not on Medicaid, AND never lived in a 2004 At-Risk ZIP code*

<table>
<thead>
<tr>
<th>Age</th>
<th>6 Months</th>
<th>9 Months</th>
<th>12 Months</th>
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<td>Test if indicated</td>
</tr>
</tbody>
</table>

Screening
- Perform Lead Risk Assessment Questionnaire (questions found in Lead Risk Assessment Questionnaire section of this document)
- Clinical assessment, including health history, developmental screening and physical exam
- Evaluate nutrition and consider iron deficiency
- Educate parent/guardian about lead hazards

Indications for Testing
- Parental/guardian request
- Possible lead exposure or symptoms of lead poisoning, either from health history, development assessment, physical exam or newly positive item on Lead Risk Assessment Questionnaire. *(Questions can be found in the Lead Risk Assessment Questionnaire section of this document)*
- Follow-up testing on a previously elevated Blood Lead Level *(Table 4)*
- Missed screening: If 12 month test was indicated and no proof of test, then perform as soon as possible after 12 months and then again at 24 months. If 24 month test was indicated and no proof of test, then perform test as soon as possible.
- For more information about lead testing of pregnant and breastfeeding women, see: http://www.cdc.gov/nceh/lead/publications/leadandpregnancy2010.pdf
Bottom Line for Clinical Management

- Confirm capillary tests for ≥5 mcg/dL
- All blood leads ≥5 mcg/dL elevated for clinical purposes (MDE law still 10 mcg/dL)
  - Talk with parents/caregivers about potential sources of lead
  - Repeat test to make sure lead is going down
  - Consider home, other investigations when lead elevated or not declining

Table 5: Clinical Guidance for Management of Lead in Children Ages 0 – 6 years

<table>
<thead>
<tr>
<th>Confirmed Blood Lead Level (mcg/dL)¹</th>
<th>&lt;5</th>
<th>5 – 9</th>
<th>10 – 19</th>
<th>20 – 44</th>
<th>45 – 69</th>
<th>≥ 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Prevention: parent/guardian education about lead hazards²</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Medical/nutritional history and physical</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Evaluate/treat for anemia/iron deficiency</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Exposure/environmental history³</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Home environmental investigation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Follow-up blood lead monitoring⁴</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Coordinate care with local health department</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Obtain developmental and psychological evaluation⁷</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Consult with lead specialist, who will also evaluate for chelation therapy</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Urgent evaluation for chelation therapy</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Hospitalize for medical emergency</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

¹ For children ages 0 – 6 years old
² If lead level elevated
³ If lead level ≥ 5 mcg/dL
⁴ If lead level ≥ 10 mcg/dL
⁵ If lead level ≥ 20 mcg/dL
⁶ If lead level ≥ 40 mcg/dL
⁷ If lead level ≥ 60 mcg/dL

Maryland Department of Health & Mental Hygiene