MDAAP/AAP Lead Testing ECHO

November 2, 2022
Session 2: Sources of Lead Exposure
ACKNOWLEDGMENTS

• This project was supported by the Cooperative Agreement Number, NU38OT000282, funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the project faculty and staff and do not necessarily represent the official views of the American Academy of Pediatrics, Centers for Disease Control and Prevention or the Department of Health and Human Services.
HOUSEKEEPING

• For educational and quality improvement purposes, this teleECHO session will be recorded
  – By participating in this session, you are consenting to be recorded – we appreciate and value your participation
• To protect patient privacy, please do not provide any protected health information (PHI)
• Please mute your microphone when not speaking
• Please enable your video if possible
• Chat with Ariana Kempa/MDAAP in Chatbox if you need technical assistance
AGENDA

• Welcome – Ariana Kempa
• Lecture Presentation – Paul Rogers and Mike Ichniowski
• QI Data Review – Troy Jacobs
• Case Presentation – Paul Rogers and Mike Ichniowski
• Case Discussion – All
• Follow Up and Next Steps – Ariana Kempa
• In the past 12 months, Drs. Ichniowski, Jacobs and Rogers have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in this CME activity.
• Drs. Ichniowski, Jacobs and Rogers do NOT intend to discuss an unapproved/investigative use of a commercial product/device in their presentation.
Learning Objectives

• Know the sources of lead exposure and hazards for Maryland children
• Identify ways to improve your practice to better identify sources of lead exposure in children in your practice
TODAY’S LECTURE

Sources of Lead Exposure

Paul T. Rogers, MD, MBA, FAAP
Michael Ichniowski, MD, FAAP
**SOURCE OF LEAD HAZARDS IN MARYLAND: PRE-1950 PROPERTIES**

**Lead Hazards Identified in Rental Housing**
Maryland Counties CY20

**Lead Hazards Identified in Rental Housing**
Baltimore City CY20

1. Primary Source of Lead Hazards in Maryland: Properties Built Before 1978

Older Homes are More Likely to Contain Lead-Based Paint

- Between 1960-1977: 24%
- Between 1940-1959: 69%
- Before 1940: 87%

https://www.epa.gov/lead/protect-your-family-sources-leadom Sources of Lead | US EPA
PROPERTIES BUILT BEFORE 1978

Deteriorated lead-based paint:
Chipping, flaking, peeling

Deteriorated lead-based paint: impact surface


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PROPERTIES BUILT BEFORE 1978

Deteriorated lead-based paint: Friction surfaces

Copyright – Riley | Ersoff LLP – Used with permission

Deteriorated lead-based paint: Chewable surface

TRADITIONALLY, PICA AND INGESTED LEAD PAINT CHIPS

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PREDICTED BLOOD LEAD LEVEL (mg/dL) BASED ON FLOOR DUST LEVEL (mg/ft²)

Thanks to Dr. Bruce Lanphear, et al. EHP 2009;117:468-474.
Sand blasting lead-based paint

Proper protection

Wet planing to remove lead-based paint

US Department of Housing and Urban Development publication
2. ADDITIONAL LEAD HAZARDS

- EBL in 11.3% Children Immigrating to the US
  - Haiti & Cuba: 40%
  - Asia: 30%
  - Vietnam & Africa: 20%
  - Near East: 10%
  
  [Image: Elevated Blood Lead Levels Children Immigrating to the US]

- Children living in low-income families and/or children from racial or ethnic minorities

- Massachusetts Dept of Public Health, CLPPP 2020:

- Iron deficiency and lead poisoning

- Prenatal lead exposure
  - [https://www.cdc.gov/nceh/lead/prevention/adoption.htm](https://www.cdc.gov/nceh/lead/prevention/adoption.htm)
**INGESTED PRODUCTS**

**Turmeric** is a key ingredient in many Indian and Asian dishes.

**Chili powder** is a dried, pulverized fruit of one or more varieties of chili pepper.

**Cumin** is a spice used in Latin American, Middle Eastern, African, and Indian cuisines, both as a whole seed and ground as a powder.

The spices used in **Kabsa** are generally black pepper, cloves, cardamom, saffron, cinnamon, black lime, bay leaves and nutmeg and usually used in Arabian meat dishes.
ADDITIONAL SOURCES OF LEAD HAZARDS IN MARYLAND: INGESTED PRODUCTS

Ceramic dishes and cups that aren’t food safe


Lead containing aluminum cookpots


The teacup and pot from Mexico with glaze

CMAJ, December 6, 2016, 188(17–18)
INGESTED PRODUCTS

Copper Service Lines
With Lead Solder


School Drinking Water

https://mde.maryland.gov/programs/Water/water_supply
INGESTED PRODUCTS

Mexican candy


Home remedies: Azarcon & Greta


Ayurvedic herbal medicine products

**WEARABLES**

These Gold 8 Bracelets from Claire’s had high levels of lead, according to the Ecology Center’s new report

https://www.ecocenter.org/about/about-ecology-center

The colored enamel on the BSA neckerchief slides contains levels of lead that exceed the limit

Recalls | CPSC.gov

Bracelet with spacer beads containing lead, resulting in lead poisoning of an infant — Connecticut, 2016


DOI: http://dx.doi.org/10.15585/mmwr.mm6634a6

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®
Henna samples contained trace amounts of lead

Shimmery lipsticks tend to contain especially high concentrations of lead

The eyes of a baby in India have been lined with kohl supposedly to help eye development

A boy in Bangladesh has kohl applied to his eyes before prayers

Environ Health Perspect. 2022 Apr; 130(4): 042001. Published online 2022 Apr 13. doi: 10.1289/EHP9220
Adam the Apple™ Children’s Stackable Toys have surface paint that could contain high lead content.

Surface paints on the Fisher-Price Elmo toy could contain excessive levels of lead. 

Fisher-Price Dora, Backpack, Perrito Figure have surface paints that could contain excessive levels of lead.

[https://www.cpsc.gov/Recalls](https://www.cpsc.gov/Recalls)
PARENT HOBBIES

Fishing lures and lead tackle

Lead in glazes and pottery

Artist’s paints

OTHER SOURCES OF LEAD HAZARDS IN MARYLAND

Piston engine airplanes

EPA Begins Study on Lead Emissions from Piston-Powered Aircraft-FLYING: EPA Begins Study on Lead Emissions from Piston-Powered Aircraft - FLYING Magazine

Household pets a monitor of lead exposure to children (?)

RESOURCES

- **Mid-Atlantic Center for Children’s Health & the Environment**
  Pediatric Environmental Health Specialty Unit
  866-622-2431
  kidsandenvironment@georgetown.edu
  www.pehsu.net/region3.html

- **Mt. Washington Pediatric Hospital Lead Treatment Program**
  410-367-2222
  www.mwph.org

- **Maryland Poison Control**
  800-222-1222

- **Maryland Department of Health (MDH)**
  (410) 767-6500 or 1-877-463-3464
  dhmh.envhealth@maryland.gov

- **Maryland Department of the Environment**
  Lead Poisoning Prevention Program
  410-537-3825/800-776-2706
  http://www.mde.state.md.us/programs/Land/LeadPoisoningPrevention/Pages/index.aspx

- **Local Health Departments’ Websites**
  https://health.maryland.gov/Pages/departments.ASPX

- **Centers for Disease Control and Prevention**
  www.cdc.gov/nceh/lead/

- **Green & Healthy Homes Initiative**
  410-534-6447
  800-370-5223
  www.greenandhealthyhomes.org/
**RESOURCES - CONTINUED**

- **Maryland Dept. Health Best Practices For Lead Poisoning Prevention And Treatment Videos**
  - Parent: [https://www.youtube.com/watch?v=B1ycx4DtPfY&feature=youtu.be](https://www.youtube.com/watch?v=B1ycx4DtPfY&feature=youtu.be)
  - Providers: [https://www.youtube.com/watch?v=aJ6QGcBB0Nc&feature=youtu.be](https://www.youtube.com/watch?v=aJ6QGcBB0Nc&feature=youtu.be)

- **Suggested Articles**

- **Maryland Chapter American Academy of Pediatrics Lead Poisoning Toolkit**: [https://www.mdaap.org/ehcc/](https://www.mdaap.org/ehcc/)
QUESTIONS?
QI DATA REVIEW

Troy A. Jacobs, MD, MPH, FAAP
# Data Collection

<table>
<thead>
<tr>
<th>Data Cycle #</th>
<th>Month of Visit (pull charts from time period listed below)</th>
<th>Date Entry in QIDA</th>
</tr>
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<tbody>
<tr>
<td>1 (baseline)</td>
<td>August 1-31, 2022</td>
<td>September 28, 2022</td>
</tr>
<tr>
<td>2</td>
<td>September 1-30, 2022</td>
<td>October 14, 2022</td>
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<td>October 1-31, 2022</td>
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<td>6</td>
<td>January 1-31, 2023</td>
<td>February 10, 2023</td>
</tr>
<tr>
<td>7</td>
<td>February 1-28, 2023</td>
<td>March 10, 2023</td>
</tr>
</tbody>
</table>
Blood Lead Results Interpretation (Follow Up Testing)

- All Groups
  - Cycle 1 (N = 1)
  - Cycle 2 (N = 1)

- Cycle 1 (N = 1)
- Cycle 2 (N = 0)
- Cycle 1 (N = 0)
- Cycle 2 (N = 0)
QUESTIONS?
CASE PRESENTATION

CC: First office visit for Shalkima, a nine-day old female brought in by the maternal grandmother for a newborn follow-up exam

Lead Hazard Assessment: Shalkima came home from the hospital to this row house located in the 21229 ZIP code where Shalkima’s mother had lived for a year before Shalkima was born. This house, built in 1921, had deteriorated paint and lead contaminated house dust throughout the interior. The ceiling in the dining room frequently leaked causing further deterioration of the paint. On visual inspection, an environmental assessment reported deteriorated paint in the bedrooms and living room and using a XRF analyzer identified lead-based paint in all the rooms of the property. No other lead hazards were identified for Shalkima and her mother.
CASE PRESENTATION

Prenatal/Birth History: Shalkima was the first-born child to a 17-year-old mother currently a senior in high school. There were no gestational exposures and Shalkima was a full-term delivery by vaginal delivery with no complications and uneventful newborn course.

Family/Social History: Shalkima lives with her mother, maternal grandmother and maternal aunt who has two boys, age two and three. Shalkima’s mother is a senior in high school getting good grades and wants to go to Baltimore Studio of Hair Design after graduation. Shalkima’s father is 21 years old, a high school graduate who currently works in an Amazon warehouse. The maternal aunt’s two boys recently had venous blood testing that showed elevated blood lead levels.

Personality/Behavior: The maternal grandmother describes Shalkima as a “good baby” who is taking 2-3 oz. of formula at each feeding, sleeps most of the night,

General Health: No health concerns since discharge from the hospital. No complaints of colic and having soft bowel movements twice a day and wet diapers 4-6 times a day.

Physical/ Neuro Exam: Ht., WT., HC. all in the normal range and normal vital signs. General physical exam normal and no abnormalities on neurological exam.
1. First thing you would do?

a) Contact mother to get more history
b) Obtain birth records from the hospital
c) Order blood work Shalkima
d) Check lead hazard exposure risk of baby’s father
e) Flat plate of baby’s abdomen
2. Most likely source of Shalkima’s elevated blood lead level is:
   a) Lead contaminated house dust on pacifier
   b) Household pet
   c) Baby formula contaminated with lead
   d) Prenatal exposure
3. The source of the maternal elevated blood lead level
   a) School drinking water at mother’s high school
   b) Mother’s lead poisoning as a child
   c) Lead contamination at the property
   d) Lead contaminated imported spices
QUESTIONS?
FOLLOW UP AND NEXT STEPS

• You will receive a follow-up email from MDAAP with:
  – PPT slides from today and a recording of the session
  – Link to the post-session SurveyMonkey

• Next Steps:
  – Complete your PDSA form and return to troy_a_jacobs@hotmail.com and loretta@mdaap.org
  – Enter your data into QIDA
  – Next webinar/Didactic & QI Session #3 on Wednesday, December 7, 2022, at 12-1p ET
THANKS
FOR TAKING CARE OF
OUR MARYLAND KIDS!