Childhood Lead Poisoning in NH:
Carroll County Community Leaders
Need to Know
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Funded by Center for Disease Control
28 Programs within the United Stated

HEALTHY HOMES
& LEAD POISONING
PREVENTION PROGRAM
New Hampshire 2012 – 2017

Average of over 800 children annually with EBLL greater than 5 µg/dl.

Fewer than 17% of children under 6 years in NH have had BLL test.

Carroll County Public Health Network

5 yr. average – 22 new children annually with BLL 5 µg/dL or higher

111 new children with EBLL’s – 2014 – 2018

Under reported – very low testing rates in many communities in your area
AGENDA

History – Why this is still an issue in US and NH?

Sources of Exposure – How are NH’s children’s poisoned?
Negative Impact on Child’s Developing Brain
Lead’s Neurobehavioral Signature

Long Term Consequences – Cincinnati Lead Study
Burden and Costs – Schools and Communities
Early Intervention, Special Education, Criminal Justice System

NH Low Testing Rates and Testing Options
Recent Legislative Changes in NH

Federal - EPA – RRP Law *(Renovate, Repair, Paint)*
NH SB 247 – April 9, 2018 – Universal Testing
Action Steps for Change
What is Lead?

What is its source?

How is it used?
62% of New Hampshire’s housing stock was built before lead in residential was banned.

History of Lead Poisoning

- 1892 – Australia
  Epidemic of childhood lead poisoning – lead paint

- 1909 - France and Austria banned white lead interior paint

- 1922 – Tunisia and Greece followed the ban

- 1926 - Great Britain and Sweden banned interior lead paint

- 1927 – Poland banned all lead–based paint.

- 1931 – Spain and Yugoslavia
History of Lead Poisoning

- 1914 – United States – first reported child death from lead poisoning
- 1922 – League of Nations – treaty to ban lead in paint
  All participating nations sign - US declines adopt
- 1940’s – US research demonstrates - if recovered from acute toxicity - significant deficits.
- 1970’s – US research demonstrates cognitive and behavior deficits with no clinical signs of toxicity.
- 1978 – Federal legislation ban its use in residential paint.
Perfect Storm

Don’t see deficits and impact until older

No Brain-Blood  Developing Brain

Sweet Tasting  Trace Amounts

Oral Stage  No Immediate Symptoms

Crawl on Floors and Pull to Standing - Surfaces Where Lead Dust Collects

Perfect Pediatric Poison
Potent Neuro-Toxicant

Synapse Formation in the Development Brain

Source: Charles A. Nelson, From Neurons to Neighborhoods
2012
- No safe level of lead
- New reference level
- 5 µg/dL
- Exposed to lead
- Need case management.

2017 – CDC announced lowering to 3.5 within the year.

RSA 130.A
Current Rules in NH
- Elevated Blood Lead Level – 3 µg/dL – 7.4 – education
- Elevated Blood Lead Level – 7.5 µg/dL or greater
  - Public Health Nurse – visits and case management
  - Katie Hatcher, RN – Statewide Coordinator
  - Manchester and Nashua Health Departments.
  - Lead Inspector – visits to identify lead hazards – both use of XRF and water tests
  - If lead hazards found in rental unit – ‘under order’ and landlord required by law to do lead hazard reduction.

Senate Bill SB247 – lowered public health 7-1-19. Will lower again 7-1-21 down to 5 µg/dl.
How Much Lead Does It Take To Poison A Child?

Demonstration

Lead’s exposures negative impact on a child’s developing brain is irreversible.

There is no cure. There is no treatment.

Did you know?

It only takes this much lead to poison a child.

In the absence of state policy, the American Academy of Pediatrics recommends that all children be tested at age one and again at age two. Yet only a fraction are ever tested. When it comes to lead exposure, it’s best to test.
Lead Poisoning. There are dense metaphyseal bands at the distal femurs and proximal tibias (white arrows). Note also there are similar dense bands at the heads of both fibulas (red arrows).
What does **Gray Matter Loss** in a Child's Brain Look Like?

Brain Scan of EBLL of 13.4 mcg/dl – male child

Dr. Kim Cecil – Cincinnati Lead Study

Source: Dr. Kim Cecil
Cincinnati Lead Study
Lead Exposure’s Negative Impact On Specific Abilities

- Early childhood lead exposure has large negative and adverse consequences on behavior, increasing impulsivity and aggression.
- Lower IQ. Lower or failing test scores
- Poor school performance and achievement
- Behavior problems
- These effect persist, from childhood through adulthood

https://mass.pbslearningmedia.org/resource/nvpw-sci-leadexposure/wgbh-nova-poisoned-water-the-health-impacts-of-lead-exposure/#.WUrNsNkGPb0
Lead’s NeuroBehavioral Signature

Lead Exposure’s Negative Impact On Specific Abilities

**Attention** – inattentive, impulsive, Hyperactive/ADD, distractibility, poor organization, lack of persistence in completing tasks

**Executive Function** – deficits in areas of strategic planning, control of impulses, flexibility of thought, self-monitoring of one’s own behaviors and emotions

**Visual/Spatial** – poor memory and organization abilities, reasoning with visually presented - non-verbal problems. Presents as deficits in reading and math

**Behavior Challenges** – impulsivity, emotional regulation, anti-social behaviors, oppositional, aggression, destructive behaviors.

**Speech and Language** – delays and deficits. Language processing deficits, hearing deficits

**Fine and Gross Motor** – Poor balance, poor coordination, lack of bilateral coordination, clumsiness and unsteadiness, higher rate of injury.
Long Term Consequences of Lead Exposure

Societal Cost of Lead

- Special Education
- Risky Behaviors
- Teen Pregnancy
- School Suspensions
- High School Drop Out
- Substance Abuse
- Juvenile Delinquency/Detention
- Child Abuse and Neglect
- Adult Criminal Activity

Ralph Spezio ~ Superintendent of Schools ~ Rochester, NY

41%

100%
9/30/2019

In Flint, Schools Overwhelmed by Special Ed. Needs in Aftermath of Lead Crisis

Tracking the Growth of Special Education in Flint
The percentage of students who qualify for special education services in Flint has grown from 13.1 percent in the school year before the water became contaminated to 20.5 percent last school year:

2012-13: 13.1%
2013-14: 15.1%
2014-15: 15%
2015-16: 16.7%
2016-17: 17.4%
2017-18: 19.8%
2018-19: 20.5%

Source: Michigan Department of Education

How Are Children Being Poisoned?

60% of New Hampshire’s housing stock was built before lead in residential was banned.
How Are Children Being Poisoned?

- Friction Surfaces: window and door jams, floors and stair treads
- Rental Properties that are not well maintained
- Lead contaminated soil
- Lead passed from mother to fetus.
- DIY (Do-It-Yourself) renovations
- Contractors not following lead-safe work practices
- 1 in 3 children poisoned during renovations
1 in 3 children are poisoned during a renovation

Call and report unsafe work practices. Local Health Officer. Take a photo of vehicle.
1 in 3 children are poisoned during a renovation
NH Legislative Updates: Childhood Lead Poisoning and Prevention

Senate Bill SB247
Signed into law by Gov. Sununu on February 8, 2018
Universal BLL Testing in NH – effective April 9, 2018

NH Statewide Testing Rates 2016

<table>
<thead>
<tr>
<th>Age</th>
<th>Number that Should Be Screened</th>
<th>Number Actually Screened</th>
<th>% Not Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year olds</td>
<td>13,521</td>
<td>8,177</td>
<td>40%</td>
</tr>
<tr>
<td>2 year olds</td>
<td>13,959</td>
<td>4,644</td>
<td>67%</td>
</tr>
</tbody>
</table>

Carroll County PHN - 2018
Blood Lead Level Testing - 1 and 2 Year Olds

<table>
<thead>
<tr>
<th>1 year olds</th>
<th>2 year olds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of 1 YO that Should Be Tested</strong></td>
<td><strong>Number of 2 YO that Should Be Tested</strong></td>
</tr>
<tr>
<td><strong>Number of 1 YO Actually Tested</strong></td>
<td><strong>Number of 2 YO Actually Tested</strong></td>
</tr>
</tbody>
</table>

- 34% of 1 YO Not Tested
- 52% of 2 YO Not Tested

Carroll County PHN - 2018
Blood Lead Level Testing - 1 and 2 Year Olds

Pediatric Labs

<table>
<thead>
<tr>
<th></th>
<th>Most Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Level</td>
<td>Required at ages 1 &amp; 2</td>
</tr>
<tr>
<td>Hgb</td>
<td>Required yearly through age 5</td>
</tr>
</tbody>
</table>
| Fluoride           | Water Source: Town Fluorinated (Concord or Penacook) on 09/21/2009
                   | No documented Fluoride result                    |
A NH Success Story: Increasing BLL Testing Rates

2016 Blood Lead Testing Rates

<table>
<thead>
<tr>
<th>Location</th>
<th># of Blood Lead Tests</th>
<th>BEFORE education (6 month period)</th>
<th>AFTER education &amp; POC Testing (6 month period)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dover</td>
<td>24</td>
<td>490</td>
<td></td>
</tr>
<tr>
<td>Laconia</td>
<td>7</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Peterborough</td>
<td>98</td>
<td>257</td>
<td></td>
</tr>
<tr>
<td>Nashua</td>
<td>88</td>
<td>172</td>
<td></td>
</tr>
</tbody>
</table>

1942%
Action Steps:

- Insure Children Are Tested – *It’s the law.*
- Educate on POC in-office blood lead level testing options.
- Educate *everyone* about impact of lead exposure.
- Educate school district leadership and special education professionals.
- Establish school district policy requiring BLL tests results documented on Kindergarten-entry health forms, special education preschool programs and special education referrals.
Action Steps:

Add RRP training and certification to building trade curriculum at vocational career centers.

Support RRP training for contractors, property owners and home owners/partner with building supply stores.

Support compliance with drinking water testing in child care centers and schools.

Implement proactive lead risk assessments of licensed child care centers to identify and prioritize removal of lead hazards.

Identify funding sources to remove lead hazards from pre-78 housing in the community – HUD and CDBG.

Action Steps:

Assist Communities to develop ordinances:

“to cause the repair” of buildings that are unfit for human habitation because of lead conditions.

require landlords to obtain a permit or certificate of compliance at certain times (every 3 years); and before receiving occupancy permit.

requiring contractors to have an EPA RRP to obtain a building permit on pre-1978 buildings.

Adopt local building code regarding “construction, remodeling, and maintenance” of all buildings.
Questions?