Some Tips and Learning Strategies for Working with Children who have been Exposed to Lead

an LDA HCP Webinar

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- Prenatal and early childhood brain is extremely vulnerable to harm, even from very low doses of toxic chemicals.

- Learning & developmental disabilities result from complex interaction of factors (genetics, low birth weight, nutrition, toxic chemicals, environment).

- National Academy of Sciences states environmental factors, including toxic chemicals, contribute to more than a quarter of learning and developmental disabilities.

We can't change our genes, but we can prevent toxic exposures!

Scientists agree:
Toxic chemicals are increasing children’s risks for learning and developmental disabilities.
Learning, attention & developmental disabilities result from a complex interaction of factors

- Genetics
- Low Birth Weight
- Nutrition
- Environment
- Toxic Chemicals
- Substance Abuse

LDA serves children and adults with LD, their families, and the professionals who work with them.
LDA’s Healthy Children Project (HCP) works to prevent exposures to toxic chemicals and pollutants linked to learning, attention, intellectual and developmental disabilities, and protect the health of all families from unnecessary toxic chemicals in our products, food, water and air.

Reducing and eliminating the preventable causes of neurological harm and reduce learning and other disabilities in future generations.
LDA’s Healthy Children Project translates scientific evidence on toxic chemicals that harm brain development into education and advocacy for LDA state affiliates, partner groups, policymakers and the public.

HCP Strategies & Tactics

- Educate & share tips
- Advocate for state and federal policies and actions for safer chemicals, water and air
- Push manufacturers and retailers to make/sell safer products
A Little About Me

- Learning Disabilities Specialist
- Educational Consultant
- Avid Reader
- Brain Nerd
Tonight’s Agenda

- Lead Exposure and Health
- Lead Exposure and Educational Outcomes
- Learning Challenges
- Strategies for Support
- Q & A
Lead paint chips and household dust are the largest source of lead poisoning in children.

Most children get lead poisoning from lead paint in homes built before 1978.

When old paint peels or cracks, it makes lead dust which kids can swallow or breath in.

Children can be exposed to lead by playing in or breathing around contaminated soil.

Lead can get in soil from lead paint chips or dust on the outside of homes or garages.

Past use of leaded gasoline may have contaminated soil.

You cannot see, taste, or smell lead in drinking water.

Certain pipes that carry drinking water from the water source to the home may contain lead.

Household plumbing fixtures, welding solder, and pipe fittings made prior to 1986 may contain lead.

High levels of lead have been found in jewelry, especially inexpensive jewelry like costume jewelry.

Lead has been found in food, spices, imported ceramic wear, and cosmetics.

It can also be found in toys made before 1978 when lead paint was banned.
Health Impacts of Lead Exposure

Bones
Calcium deficiency which can lead to Osteoporosis and other bone damage

Organ Damage
Once it enters the body, lead is distributed to organs such as brain, kidneys, liver, and the heart. Adults who have been exposed to lead in their lifetimes can develop anemia and other conditions.

Cognitive Development
Decreased IQ, reduced problem solving, and learning disabilities

Behavior
ADHD and/or other behavioral issues
µg/dL = microgram per deciliter

Micrograms (µ) are a million times smaller than grams

1 paperclip is about 1 gram

Deciliters (dL) are ten times smaller than a liter

1 deciliter is just over 3 ounces
Blood Lead Levels (BLL) of Concern According to CDC

Before 2012: 10 or more µg/dL
2012: 5 or more µg/dL
2022: 3.5 or more µg/dL

BUT

There is NO safe level of lead exposure
# Studies on Lead and Educational Outcomes

<table>
<thead>
<tr>
<th>Blood Lead Levels</th>
<th>Educational Impact</th>
<th>Size of Study</th>
<th>Location of Study</th>
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<tbody>
<tr>
<td>≤ 3 µg/dL</td>
<td>Decreased end of grade test scores</td>
<td>More than 57,000 children</td>
<td>North Carolina (Miranda et al. 2009)¹</td>
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<td>4 µg/dL at 3 years of age</td>
<td>Increased likelihood learning disabled classification in elementary school</td>
<td>More than 57,000 children</td>
<td>North Carolina (Miranda et al. 2009)¹</td>
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<td>Poorer performance on tests</td>
<td>35,000 children</td>
<td>Connecticut (Miranda et al. 2011)</td>
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<td>5 µg/dL</td>
<td>30% more likely to fail third grade reading and math tests</td>
<td>More than 48,000 children</td>
<td>Chicago (Evens et al. unpublished data)</td>
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<td>More likely to be non-proficient in math, science, and reading</td>
<td>21,000 children</td>
<td>Detroit (Zhang et al. 2013)</td>
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<tr>
<td>5-9 µg/dL</td>
<td>Scored 4.5 points lower on reading readiness tests</td>
<td>3,406 children</td>
<td>Rhode Island (McLaine et al. 2013)</td>
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<tr>
<td>≥10 µg/dL</td>
<td>Scored 10.1 points lower on reading readiness tests</td>
<td>3,406 children</td>
<td>Rhode Island (McLaine et al. 2013)</td>
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<tr>
<td>10 and 19 µg/dL</td>
<td>Significantly lower academic performance test scores in 4th grade</td>
<td>More than 3,000 children</td>
<td>Milwaukee (Amato et al. 2012)</td>
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<td>≥ 25 µg/dL</td>
<td>$0.5 million in excess annual special education and juvenile justice costs</td>
<td>279 children</td>
<td>Mahoning County, Ohio (Stefanak et al. 2005)</td>
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In children, exposure to lead is linked to:

- ADHD
- aggression
- bullying
- cognitive challenges
- learning disabilities
- poor problem solving
Helping Children who have been Exposed to Lead

**Nutrition**

Healthy eating habits can help prevent more lead absorption!

- **Calcium**: dairy, eggs, broccoli, spinach
- **Vitamin C**: broccoli, corn, tomatoes, peppers, onions, avocados, dark green leafy vegetables
- **Iron**: meat and seafood, beans, dark leafy greens, eggs, peanut butter, almonds, whole grains, prunes

**TO DO**

**Support**

Studies that examine the impact of lead on child outcomes—including measures to control for the resources within the home—find that a supportive home environment has a strong positive influence on a child’s IQ (Lanphear et al. 2005; Tong et al. 1996).
• ADHD
• aggression
• bullying
• cognitive challenges
• learning disabilities
• poor problem solving
Executive Functioning

"Executive function is a set of mental processes that helps connect past experience to present action. People use it to perform activities such as planning, organizing, strategizing, paying attention to and remembering details, and managing time and space." (NCLD)
Initiation: Bringing action to purpose
Organization: Managing space and materials for productivity
Attention: Orchestrating thought & memory
Working Memory: Mobilizing one’s awareness & activates executive thinking
Managing Emotions: Regulating for responses proportional and appropriate to an event or thought
Flexibility: Shifting attention & tempo to handle interruption
Planning: Managing time to complete specific tasks to reach a goal
Self-Awareness: Reconciling differences between how a person sees you and how you are perceived by others
Be the safe space.

Be as consistent as possible.

Be honest.

Be open.
Know your child.

- Learning Style
- Self-regulation
- Developmental gaps or strengths

Know the guidelines for classroom work.

- Teacher expectations
- Communication tools
Spaces at Home

Initiation  Flexibility  Attention  Organization  Working Memory  Planning  Self-Awareness  Managing Emotions
Organization = Materials

- Have a spot for the backpacks when they come home.
- Keep an extra supply of the basics so you are not reliant on things coming and going from school.
- Have a folder system for homework to do and homework that is done. (many teachers will set up these systems, but not all)

Talk with your child about his or her system!

Talk with your child about YOUR organizational systems!
Planning = Time

• Have some type of planner to use to map out homework and projects. Can also include breaks, free time, etc... This can help make time more visible and concrete - many of our ADHD or LD kiddos need this so they can see that they won’t be having to work indefinitely or ALL the time.

• Provide the structure but keep choice as well. For example, "you will be working for 30 minutes right now. Do you want to start with math or with spelling?"
Some Tools for Success

- Paper
- Pencils & Pens
- Highlighters
- Colored pencils
- Calculator
- Notecards
- Post-it Notes
- Page Protector w/ Expo Marker
- Thinking Putty
- A Timer (I prefer Time Timers)
- A ruler
- Scissors
- Gluesticks
- Markers
- Dice
- Letter Tiles
- Small write-on-wipe-off board
- Sidewalk Chalk
- Poker Chips
- Reading Strips
- Pencil Grips
Other Tools

Reading Strip

Time Timer
Dr. Daniel Siegel presenting a Hand Model of the Brain
THE Most Important Tool

TAKE A DEEP BREATH