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Lead Poisoning
in Children

Lead is a substance found in the environment that can cause serious health concerns in young children. This is because lead affects developing nerves and brains. According to the Centers for Disease Control and Prevention (CDC), at least 4 million households have children who are being exposed to lead.[1] Furthermore, the CDC estimates that 1 in 38 U.S. children aged 1 to 5 years has high levels of lead in his/her blood.[2] That's about 535,000 children.[2]

Lead can build up in the body over time. So repeated exposure to even small amounts can cause harm. And the harm caused by lead cannot be reversed.

Sources of lead

- Lead-based paint (made before 1978) that is still on walls, windows and windowsills, doors and door frames, stairs, railings, banister, and porches in older buildings
- Water coming from lead pipes and plumbing fixtures made before 1986
- Soil contaminated by paint or gasoline exhaust—found near roads, old buildings, old playground equipment
- Playgrounds with artificial turf or surfaces made of lead-containing shredded rubber
- Household dust contaminated with lead—comes from chipped, peeling paint; home repair/renovation; contaminated soil; contaminated work clothes
- Painted toys, furniture, metal, or painted toy jewelry (made before 1976 or made outside the U.S.)
- Children's paint sets and art supplies
- Cosmetics such as lipstick
- Lead crystal, lead-glazed pottery or porcelain, pewter pitchers and dinnerware
- Industry: mining, smelting, battery recycling, furniture refinishing, auto body workshop
- Hobby: lead bullets used for hunting, lead sinkers used for fishing, stained glass, stock cars, pottery glazing, jewelry making, miniature lead figures, hobbies involving soldering
- Mexican folk remedies for upset stomach and diarrhea

Symptoms of lead poisoning

Children exposed to even low levels of lead may show these symptoms:

- Behavior problems: inattentive, hyperactive, disorganized, less able to follow directions, agitated, aggressive, irritable
- Lower IQ and learning problems
- Hearing problems
- Slow growth

Higher levels (uncommon) may cause:

- Stomach pain/cramping
- Constipation
- Difficulty sleeping
- Headaches
- Loss of previous development skills
- Low appetite and energy
- Reduced sensations
- Anemia
- Clumsiness, problems with balance

Very high levels of lead can cause vomiting, muscle weakness, staggering, seizure, coma, and death.

The risk in young children

Young children are at risk of lead poisoning for 2 reasons. First, they chew and suck on toys, furniture, and windowsills. They play in the dirt and then put their fingers in their mouths. They breathe in dust while crawling on the floor. If any of these are contaminated with lead, lead will enter their body. So their behaviors put them at higher risk of exposure.

Second, the nerves and brain are in the developmental stage in young children. Only small amounts of lead are needed to harm their development. So they are at higher risk of having symptoms from lead exposure.

Prevention in young children

One of the key ways to prevent lead poisoning in young children is to test their blood for the presence of lead. If the level is high (≥5 µg/dL*), steps can be taken to decrease or get rid of their exposure. This can prevent blood lead levels from rising. That, in turn, can prevent symptoms from developing or worsening.

*This is the cutoff recommended by the CDC in 2012.[3] They lowered the cutoff from 10 µg/dL since "no safe blood level in children has been identified."[3]

Testing recommendations

Many states have their own testing recommendations. Some states recommend testing all young children. Others recommend testing just those at increased risk. Some states recommend testing as early as 6 months. Others recommend testing at ages 1 and 2 years. It's important to test more than once, because a child's exposure may change as he/she grows. For example, things out of reach for a 1-year-old might not be out of reach for a 2-year-old.

The CDC provides recommendations for states that don't have their own. The CDC recommends a screening blood lead test for all children at ages 1 and 2 years.[4] The CDC also recommends screening children between 3 and 6 years of age if not previously screened.[4]

What to do when the test result is high

- Find out how the child is coming in contact with lead
- Take steps to stop that contact
- Counteract the negative effects of lead poisoning by
  - Providing a nurturing and mentally enriched environment
  - Providing a healthy diet, especially one rich in iron, vitamin C, and calcium

For levels ≥45 µg/dL, chelation therapy should be used to remove lead from the body.[5] Other things can also be used to treat high doses of lead that occur over a short time. These include bowel irrigation with polyethyleneglycol and/or gastric lavage.

Additional information

- For a person with severe symptoms, call 911; for a patient with all other symptoms, call the poison control center at 800-222-1222, your doctor, or local department of public health.
- Testing recommendations in your state: www.cdc.gov/HealthyHomes/programs.html
- Advice on safe removal of lead paint:
  - Housing and Urban Development (HUD) at 800-RID-LEAD
  - National Information Center at 800-LEAD-FYI
  - National Lead Information Center at 800-424-5323
- Products (toys, jewelry, furniture, crafts, office supplies, foodware, clothing) recalled due to lead contamination: www.cdc.gov/nceh/lead/Recalls/default.htm
- Other information about lead poisoning: United States Environmental Protection Agency: www2.epa.gov/lead

References

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5. Centers for Disease Control and Prevention. Managing elevated blood lead levels among young children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Atlanta, GA: Centers for Disease Control and Prevention; 2002. www.cdc.gov/nceh/lead/CaseManagement/caseManage_main.htm. Accessed March 5, 2013.