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Lead Poisoning in Children

Lead exposure used to come mostly from lead paint and gasoline. Once the lead was removed from paint and gasoline, fewer children were exposed. But the problem has not gone away. Children younger than 6 years old still test high each year. This is very important because lead can build up in the body over time. So repeated exposure to even small amounts of lead can harm mental development. And these effects cannot be reversed.

Children ≤6 years old are very susceptible to harm from lead. This is because it affects developing nerves and brains. Unborn children are even more at risk of harm.

Symptoms

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.



CDC changes—impact on incidence and follow-up care

In 2012, the CDC changed the blood level at which physicians should provide follow-up care.¹ They lowered the cutoff from 10 µg/dL to 5 µg/dL. This means that more children will be considered at risk for having harmful effects from lead exposure. Using this new cutoff, the CDC estimated 1 in 38 U.S. children has high blood levels. That's 535,000 children aged 1 to 5 years.²

The CDC recognizes that *there is no clear cutoff below which lead exposure is safe*. Taking action when blood levels are lower should help prevent harmful effects of lead. To read more about the changes from the CDC, go to www.cdc.gov/mmwr/preview/mmwrhtml/mm6213a3.htm.

**Prevent irreversible
symptoms—test early
and follow up on high
results.**

Who should be tested

Many states recommend blood lead screening for young children. You can find risk assessment and screening strategies for your state at www.cdc.gov/HealthyHomes/programs.html. When a state or local screening plan is absent, the Centers for Disease Control and Prevention (CDC) recommends a screening blood lead test at ages 1 and 2 years.³ The CDC also recommends screening children between 3 and 6 years of age if not previously screened.³

It's important to screen 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 may not be out of reach for a 2-year-old. Note that some states recommend screening as early as 6 months.

Laboratory testing for blood lead

Quest Diagnostics offers highly complex blood lead testing. Two methods are available: inductively coupled plasma/mass spectrometry and atomic spectroscopy. The tests are compliant with all requirements for testing performance. They give definitive results that can be used to confirm screening tests that other laboratories may perform.

Quality indicator: one of Quest Diagnostics experts is a member of the Laboratory Workgroup that reports to the CDC Advisory Committee on Childhood Lead Poisoning Prevention.

How to follow up test results

CDC recommendations for follow-up are designed to prevent the harmful effects of lead.

Table. Recommended Follow-up for Various Blood Lead Levels^{1,4}

Blood Lead (µg/dL)	Follow-up
<5	None
5–14	Nutritional and environmental education Follow-up blood lead monitoring
15–19	Nutritional and environmental education Follow-up blood lead monitoring; if level rises or if level stays within this range ≥3 months later, see follow-up for 20-44 µg/dL levels
20–44	Environmental evaluation and remediation and a medical evaluation; medical intervention may be needed
45–69	Medical and environmental interventions including chelation therapy
≥70	Medical emergency treatment

Data presented herein is for informational purposes only. A physician's test selection and interpretation, diagnosis, and patient management decisions should be based on his/her education, clinical expertise, and assessment of the patient.

Counsel parents^{3,4}

- Locate source of the lead and keep children away; remove source of lead when able
- Use lead-safe methods when fixing, painting, or remodeling their home
- Be sure their children get enough iron, vitamin C, calcium, and other nutrients
- Provide a nurturing and enriched environment for their child

See references 3 and 4 for a wealth of additional information.

References

1. Centers for Disease Control and Prevention. CDC response to Advisory Committee on Childhood Lead Poisoning Prevention recommendations in "Low level lead exposure harms children: a renewed call for primary prevention." Atlanta, GA: US Department of Health and Human Services, CDC; June 7, 2012. www.cdc.gov/nceh/lead/acclpp/cdc_response_lead_exposure_recs.pdf. Accessed March 5, 2013.
2. Centers for Disease Control and Prevention. Blood lead levels in children aged 1-5 years—United States, 1999-2010. *MMWR Morb Mortal Wkly Rep.* 2013;62:245-248. www.cdc.gov/mmwr/preview/mmwrhtml/mm6213a3.htm. Accessed April 11, 2013.
3. Centers for Disease Control and Prevention Advisory Committee on Childhood Lead Poisoning Prevention. Interpreting and managing blood lead levels <10 µg/dL in children and reducing childhood exposures to lead: recommendations of CDC's Advisory Committee on Childhood Lead Poisoning Prevention. *MMWR Recomm Rep.* 2007;56(RR-8):1-16. www.cdc.gov/mmwr/preview/mmwrhtml/rr5608a1.htm. Accessed April 11, 2013.
4. 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.