

Lead Exposure in Children

Key Messages

- Be aware that while most children show no clinical symptoms, lead exposure can result in learning and behavior problems. Exposures at higher levels can present with anemia, abdominal pain, vomiting, seizures, symptoms of encephalopathy, hypertension, or kidney problems and can lead to organ damage and death.
- Educate parents and assess children up to age 6 years annually AND test those at risk, including all children at ages 1 and 2 years, as mandated (10 NYCRR §67-1.2). Consider testing older children with a history of elevated blood lead levels (BLLs), foreign residency, eating nonfood items, sickle cell disease, or developmental delays.
- Use the Online Registry to view children's BLLs, find management recommendations, access NYC Health Department home inspection results, and report BLLs ≥ 5 $\mu\text{g}/\text{dL}$ within 24 hours. To report a hospital admission or discuss a case, call 646-632-6002.

Recommended Lead Risk Assessment Questions

Use to assess lead exposure. If the answer to any question is yes, the child should have a blood lead test.

- Is your child between 9 and 36 months old? *Children at this age typically have hand-to-mouth behavior, placing them at risk of exposure.*
- Have any of your children or their playmates ever had a high BLL?
- Does your child spend time in an older home or other place with peeling or damaged paint or somewhere that has recently undergone renovation? *Although lead-based paint for residential use in NYC was banned in 1960, about 67% of NYC housing was built before 1960.*
- Does your child have any developmental delays, have hand-to-mouth behavior, or put nonfood items, such as paint chips or soil, in his or her mouth? *Children with autism often have hand-to-mouth activity that puts them at greater risk for lead poisoning.*
- Has your child moved to the US from, or traveled to, a foreign country where lead poisoning is common?^a *Foreign-born children, particularly children who are refugees or internationally adopted, should have their BLL tested when they arrive in the US and again 3 to 6 months after they have settled in permanent housing.*
- Does your family use products from other countries, such as health remedies, spices, food, or pottery?
- Does your child play near a highway, bridge, or elevated train where there is peeling paint?
- Does your child come into contact with someone whose job or hobby involves exposure to lead (such as bridge repainting or repair, construction or demolition, home painting or renovation, automotive or electronics repair, furniture refinishing, or working with firearms, jewelry, pottery, stained glass, metals, or color pigments)?
- Are you planning to enroll your child in Medicaid or the NYC Early Intervention Program?^b

^a Among NYC children whose families were interviewed between 2014 and 2018, elevated BLLs have been found, in descending order of frequency, in at least 2 children emigrating from Pakistan, Bangladesh, Haiti, Georgia, Dominican Republic, India, Uzbekistan, Afghanistan, Guatemala, Egypt, Honduras, Nigeria, China, Yemen, Ghana, Mexico, Guinea, Guyana, Ecuador, Ivory Coast, Jamaica, Nepal, Burkina Faso, Gambia, Morocco, Togo, Senegal, Mali, Russian Federation, United Arab Emirates, United Kingdom, Algeria, Armenia, and Liberia.

^b Medicaid requires a blood lead test for children up to age 6 years who have not been previously tested. Enrollment in preschool/day care and the Early Intervention Program both require BLL documentation.

Recommended Educational Messages

- Keep your child away from peeling paint and home repairs that disturb paint.
- Report peeling paint to your landlord. If your landlord does not make repairs, call 311.
- Frequently wash hands, toys, pacifiers, bottles, and other items your child puts in their mouth.
- Clean floors, windowsills, and dusty places often with wet mops and wet cloths.
- Avoid using health remedies and eye cosmetics (such as kohl, kajal, or surma) from other countries. Some of these products have been found to contain high levels of lead. (*For more information, visit nyc.gov/hazardousproducts.)*
- Avoid using imported clay pots and dishes to cook, serve, or store food, and do not use pottery that is chipped or cracked.
- Use caution when using candies, spices, foods, and children's toys and jewelry purchased in other countries. These items may contain lead.
- Run your tap for at least 30 seconds, until the water is noticeably colder, before using it for drinking, cooking, or making baby formula any time a faucet has not been used for several hours.
- If any household members have jobs or hobbies that expose them to lead, keep your child away from their work clothes and tools. Wash their work clothes separately from other laundry and have them remove their shoes and work clothes before entering the house.
- Call 311 to report unsafe repair work creating dust.

See Reverse for Recommended Management and Follow-up Blood Lead Test Schedule for Children

Lead Exposure in Children

Recommended Management of Children

BLL (µg/dL)	Recommendations
5 to <20	<ul style="list-style-type: none"> • Assess potential sources of exposure by asking the Recommended Lead Risk Assessment Questions (see reverse). • Provide Recommended Educational Messages (see reverse). • Evaluate for adequate intake of calcium and iron. Adequate stores may decrease gastrointestinal absorption of lead. • If a fingerstick specimen, confirm with venous specimen within time frame specified in Recommended Follow-up Blood Lead Test Schedule below. Venous specimens are more accurate than fingerstick specimens. • Report BLL to NYC Health Department within 24 hours via the Online Registry (nyc.gov/health/cir) or by fax to 347-396-8935. • If analyzing specimens in your office using a point-of-care device (LeadCare®), remember to report BLLs <5µg/dL within 5 days and BLLs ≥5µg/dL within 24 hours. • Monitor development even after BLLs decrease. Consider this child at risk for developmental and behavioral problems. • Consider referring patients persistently eating nonfood items for behavior modification therapy. • Monitor BLLs as per Recommended Follow-up Blood Lead Test Schedule below. • The NYC Health Department will: <ul style="list-style-type: none"> ◦ Provide educational information to the family and health care provider. ◦ Inspect the homes of children with venous specimens to identify potential lead sources. ◦ Order the landlord to repair any lead paint hazards identified. ◦ Refer children aged <35 months to Early Intervention for developmental monitoring. • To access inspection results, visit the <i>risk assessment and home inspection results</i> link on the “Immunization and Lead History” page of the Online Registry.
20 to <45	<p>All actions for BLLs 5 to <20 µg/dL, and:</p> <ul style="list-style-type: none"> • Evaluate for iron-deficiency anemia, often associated with lead poisoning. • Consider abdominal x-ray if paint chips or other solid lead ingestion is suspected; if radio-opaque particles are found or recent ingestion is witnessed, use a cathartic.
≥45	<p>All actions for BLLs 5 to <45 µg/dL, and:</p> <ul style="list-style-type: none"> • Arrange hospitalization and chelation according to the “Recommended Chelation Protocol for Children With BLLs ≥45 µg/dL,” at www1.nyc.gov/assets/doh/downloads/pdf/lead/lead-chelation.pdf. • Perform complete neurologic exam. • Confirm BLL with venous specimen processed as an emergency test before providing chelation, unless symptoms of encephalopathy are present. • Obtain abdominal x-ray to look for paint chips/other solid lead ingestion; if radio-opaque particles are found or recent ingestion is witnessed, use a cathartic. • Monitor erythrocyte protoporphyrin (EP) levels to help assess timing of exposure. • Child must receive chelation therapy in, and be discharged to, a lead-safe environment. Do not discharge the child until the NYC Health Department inspects the home. • Inform the NYC Health Department of hospital admission by calling 646-632-6002. • The NYC Health Department can provide: <ul style="list-style-type: none"> ◦ Referrals to providers with expertise in treating lead poisoning. For consultations on evenings and weekends, call the Poison Control Center at 212-POISONS (764-7667). ◦ Referrals to temporary lead-safe housing.

Recommended Follow-up Blood Lead Test Schedule for Children

Fingerstick BLLs ≥5 µg/dL		Venous BLLs ≥5 µg/dL		
Capillary Test Result (µg/dL)	Confirmatory Venous Test	Venous BLL (µg/dL)	Early Follow-up Test (first 2 to 4 tests after identification)	Late Follow-up Test (after BLL begins to decline)
5 to <10	1 to 3 months	5 to <10	3 months	6 to 9 months
10 to <45	1 week to 1 month	10 to <20	1 to 3 months	3 to 6 months
≥45	Immediately	20 to <25	1 to 3 months	1 to 3 months
		25 to <45	2 weeks to 1 month	1 month
		≥45	As soon as possible	Chelation with follow-up

See Reverse for Recommended Lead Risk Assessment Questions and Educational Messages