

Lead Exposure in Adults

Key Messages

- Test blood lead levels (BLLs) of adults at risk for lead exposure.
- Recognize the signs and symptoms of lead poisoning.
- Report BLLs ≥ 5 $\mu\text{g}/\text{dL}$ to the New York City (NYC) Health Department by fax to 347-396-8883. To report a hospital admission or discuss a case, call 646-632-6102.

Recommended Lead Risk Assessment Questions

*Use to assess lead exposure, especially in patients who were born or have spent time outside of the United States or patients with anemia, fertility, cognitive, or renal issues not otherwise explained. If the answer to any question is **yes**, draw blood for a lead test.*

- Do you now have, or have you ever had, a job or hobby that could expose you to lead?
In NYC, most adult lead poisoning cases are related to repainting or repairing steel bridges or other steel structures containing lead paint. Other jobs or hobbies with potential lead exposure include construction and demolition, home painting and renovation, automotive and electronics repair, furniture refinishing, and working with firearms, jewelry, pottery, stained glass, metals, and color pigments.
- In the last 12 months, did you use any products from other countries, such as Ayurvedic or other health remedies, spices, foods, pottery, religious powders, cosmetics, or leaded crystal?
For more information, visit nyc.gov/hazardousproducts.
- In the last 12 months, did you eat, chew on, or put in your mouth any nonfood items such as clay, crushed pottery, soil, or paint chips?
This behavior has been observed in individuals with cognitive disabilities and pregnant individuals from certain cultures.
- Do you have any retained metal fragments, such as bullets, in your body?
- Have you ever had a high BLL?
Endogenous bone lead that has accumulated from past exposures can be released during times of bone turnover, such as prolonged immobilization following long-bone fracture, hyperthyroidism, menopause, pregnancy, and lactation.

Signs and Symptoms

- Most adults with elevated lead levels are asymptomatic.
- Vague nonspecific symptoms may include myalgias, arthralgias, fatigue, irritability, insomnia, anorexia, constipation, decreased libido, impaired short-term memory, difficulty concentrating, and headaches.
- At higher BLLs, more specific signs and symptoms may include abdominal pain (“lead colic”), metallic taste, infertility, increased blood pressure, nephropathy, microcytic anemia, basophilic stippling in erythrocytes, peripheral motor neuropathy (extensor weakness or “wrist or ankle drop”), gout (“saturnine gout”), and encephalopathy.

Diagnostic Tests

- The standard test for diagnosing lead exposure is a venous blood lead test.
- Erythrocyte protoporphyrin (EP) levels, including zinc protoporphyrin (ZPP) and free erythrocyte protoporphyrin (FEP), are useful in differentiating between acute and chronic exposure. EP levels are elevated in patients with chronic exposure to lead and may also be elevated in patients with iron deficiency anemia. EP levels are not a reliable measure for screening patients for lead exposure.

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Recommended Management of Adults

BLL (µg/dL)	Recommendations
3.5 to <10	<ul style="list-style-type: none"> Assess potential sources of exposure by asking the Recommended Lead Risk Assessment Questions (see reverse). Recommend ways to reduce sources of lead exposure (see Recommended Educational Messages below). Consider monthly blood lead testing for adults at risk for continued exposure to lead. For more information on managing lead exposure in pregnancy, visit www1.nyc.gov/assets/doh/downloads/pdf/lead/lead-guidelines-preg.pdf. The NYC Health Department can provide educational information on strategies to reduce exposure.
10 to <50	<p>All actions for BLLs 3.5 to <10 µg/dL, and</p> <ul style="list-style-type: none"> Consider referring to a medical toxicologist or, if occupationally exposed, to an occupational medicine physician. The NYC Health Department will assess potential lead sources and recommend strategies to reduce exposure.
≥50	<p>All actions for BLLs 3.5 to <50 µg/dL, and</p> <ul style="list-style-type: none"> Consult with the NYC Health Department and a medical toxicologist to consider chelation in nonpregnant patients. <ul style="list-style-type: none"> The decision to chelate is based upon the presence and duration of lead-related symptoms, current BLL, and duration of exposure. Before chelation therapy is administered, the patient must be removed from lead exposure, since continuing exposure may result in enhanced absorption of lead and worsening of toxicity. If the patient is occupationally exposed, consult with an occupational medicine physician. Consider monitoring erythrocyte protoporphyrin (EP) levels to help assess timing of exposure.

Recommended Educational Messages

- Patients who have jobs or hobbies that may involve exposure to lead should use personal protective equipment and workplace hygiene to keep exposure as low as possible and prevent take-home exposures for other household members. Advise patients to:
 - Wear an appropriate respirator and keep it clean.
 - Use safe work practices and wet cleaning methods to reduce dust exposure. Never dry sweep or use compressed air.
 - Never eat, drink, or smoke in the work area. Wash hands and face before eating, drinking, or smoking.
 - When possible, wash or shower and change clothes and boots before leaving work. Keep all work items away from family areas, and wash and dry work clothes separately from other laundry.
- Advise against using consumer products from other countries that may contain lead, such as certain health remedies, cosmetics, and religious powders. (For more information, visit nyc.gov/hazardousproducts.)
- Use caution when eating snacks, foods, and spices purchased in other countries. These items may contain lead.
- Avoid using glazed clay pots and dishes from other countries to cook, serve, or store food, and do not use pottery that is chipped or cracked. Some ceramic ware may contain lead.
 - Never eat nonfood items such as clay, soil, pottery, or paint chips.

Resources

- Call the NYC Health Department at 646-632-6102 during regular business hours to:
 - Report adult BLLs ≥5 µg/dL (fax to 347-396-8883).
 - If analyzing specimens in your office using a point-of-care device (LeadCare®), report BLLs within 5 days.
 - Receive more information on adult lead poisoning and strategies to reduce exposures.
 - Obtain a referral to a medical toxicologist or an occupational medicine physician.
 - Discuss a product your patient is using that may contain lead.
- For consultations on evenings or weekends, call the Poison Control Center at 212-POISONS (764-7667).
- To refer to a New York State occupational health clinic, visit www.health.ny.gov/environmental/workplace/clinic_network.htm.
- Consult the Occupational Safety and Health Administration (OSHA) standards for construction workers and other employees in certain lead-related industries at www.osha.gov/SLTC/lead.
- To find a New York State laboratory certified to analyze blood for lead, call 518-485-5378 or visit www.wadsworth.org/labcert/lep/CategoryPermitLinks/CategoryListing.htm.
- To find an OSHA laboratory approved to analyze blood drawn as part of an occupational lead program, visit www.osha.gov/SLTC/bloodlead/index.html.
- Find more information on lead poisoning at nyc.gov/lead.