

Lead Exposure in Pregnancy

Key Messages

- Be aware that maternal lead exposure is associated with spontaneous abortions, premature birth, maternal hypertension, and decreased fetal growth. Fetal exposure may adversely affect neurodevelopment.
- At the first prenatal visit, educate your patients on how to prevent lead exposure, assess exposure using the questions below, AND test those at risk as mandated (10 NYCRR §67-1.5).
- Report blood lead levels (BLLs) ≥ 3.5 $\mu\text{g}/\text{dL}$ to the New York City Department of Health and Mental Hygiene (NYC DOHMH) by fax to 347-396-8883. To report a hospital admission or discuss a case, call 646-632-6002.

Recommended Lead Risk Assessment Questions

Use to assess lead exposure during pregnancy. If the answer to any question is yes, draw blood for a lead test.

- Have you ever had a high BLL?
- Were you born, or have you spent any time, outside of the United States?^a
- During the past 12 months, did you use any products from other countries, such as health remedies, spices, foods, ceramics, or cosmetics?
- At any time during your pregnancy, did you eat, chew on, or put in your mouth any nonfood items such as clay, crushed pottery, soil, or paint chips?
- In the last 12 months, has there been any renovation or repair work in your home?
- Do you now have, or have you ever had, a job or hobby that could expose you 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?

^aApproximately 90% of pregnant people with elevated BLLs in NYC who were interviewed between 2016 and 2020 were born outside of the United States. Among these people, elevated BLLs have been found in at least 2 individuals emigrating from, in descending order of frequency, Mexico, Georgia, Bangladesh, Pakistan, Guatemala, India, Ecuador, Dominican Republic, Haiti, Morocco, Nigeria, Algeria, Russian Federation, Nepal, Ghana, Uzbekistan, China, Egypt, Guinea, Jamaica, Senegal, Yemen, Afghanistan, Cameroon, Gambia, Guyana, Honduras, Kazakhstan, Armenia, Australia, Bulgaria, Colombia, Côte d'Ivoire, El Salvador, and Ukraine.

Recommended Educational Messages

- Avoid using health remedies from other countries. Keep cosmetics and religious/cultural powders such as kohl, kajal, surma, and sindoor away from children. Some of these products have been found to contain high levels of lead. See [nyc.gov/hazardousproducts](https://www.nyc.gov/hazardousproducts).
- Avoid eating candies, spices, and foods purchased in other countries. These items may contain lead, and it is best to avoid them during your pregnancy.
- Avoid using imported clay pots and dishes to cook, serve, or store food, and do not use pottery that is chipped or cracked.
- Never eat or mouth nonfood items, such as clay, soil, pottery, or paint chips.
- Stay away from any repair work being done in the home and call 311 to report any unsafe repair work creating dust.
- Avoid jobs or hobbies that may involve 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.
- Eat a balanced diet with adequate intake of calcium and iron.

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Recommended Management During Pregnancy		
BLL (µg/dL)	Recommendations	Frequency of Follow-up Venous Testing
3.5 to <25	<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.^a Monitor BLL. In addition, obtain a maternal BLL OR cord BLL at delivery AND another maternal BLL 1 month after delivery. Refer to an occupational medicine specialist if occupational exposure is suspected. The NYC DOHMH can provide educational information on potential lead sources and strategies to reduce exposure 	<ul style="list-style-type: none"> Within 1 month and then every 1 to 3 months
25 to <45	<p>All actions for BLLs 3.5 to <25 µg/dL, and</p> <ul style="list-style-type: none"> Consider monitoring erythrocyte protoporphyrin (EP) levels to help assess timing of exposure.^b Advise breastfeeding patients with BLLs ≥ 40 µg/dL to pump and discard their breast milk until their BLLs drop below 40 µg/dL. 	<ul style="list-style-type: none"> Within 2 weeks and then every month
≥ 45	<p>All actions for BLLs 3.5 to <45 µg/dL, and</p> <ul style="list-style-type: none"> Confirm BLL with venous sample. Treat as high-risk pregnancy and consult with the NYC DOHMH and a lead poisoning expert to consider hospitalization and chelation. <i>Chelation with CaNa₂EDTA (250 mg q6 x 20 doses with each dose given over 1 hr) is typically not recommended in the first trimester of pregnancy unless symptoms of encephalopathy are present.</i> Monitor EP levels to help assess timing of exposure.^b 	<ul style="list-style-type: none"> Within 24 hours and then at frequent intervals, depending on clinical management and BLL trend

^aAdequate stores of iron and calcium may decrease gastrointestinal absorption of lead. Adequate stores of calcium may decrease mobilization of lead from maternal bone.

^bThe BLL reflects more recent exposure to lead, whereas the EP level reflects more chronic exposure. Once elevated, the EP level remains elevated for several months, even after exposure has ceased and the BLL has fallen.

Recommended Blood Test Schedule for Lead-Exposed Infants (Age 0 to 5 Months)		
Umbilical Cord BLL at Delivery (µg/dL)	Initial Infant Venous Test	Follow-up Venous Test
0 to <3.5	None	Based on infant's risk of current exposure
3.5 to <25	Within 1 month	Every 1 to 3 months
25 to <45	Within 2 weeks	Every 2 weeks to 1 month
≥ 45	Within 24 hours	Consider chelation in collaboration with the NYC DOHMH and a lead poisoning expert.