

Identification and Management of Lead Exposure in Pregnant & Lactating Women

1. Primary prevention of childhood lead poisoning begins before birth
2. All pregnant women should be given guidance and education about potential lead exposure and risk reduction
- 3. Routine blood testing of all pregnant women is not recommended**
4. Blood lead testing of pregnant women with identified risk factors for lead exposure is recommended for affirmative answers for questions 1-7 on the *Prenatal Risk Assessment for Lead*. In Ohio, these are the main risk factors for lead poisoning:
 - a. Occupations or hobbies that have the potential for lead exposure (see risk assessment tool)
 - b. Children in the household with lead poisoning
 - c. Personal history of lead poisoning
 - d. Remodeled or renovated a home built before 1978 in the past 5 years
 - e. Has eaten non-food items (pica behavior)
 - f. Was born or has spent significant time outside of the United States
5. The *Prenatal Risk Assessment for Lead* tool questions 8-11 are useful in identifying specific areas of potential lead exposure for risk reduction counseling and education
6. If Blood Testing is done:
 - a. Venous sample only should be drawn as early in pregnancy as possible
 - b. For a list of certified laboratories using approved methods, see:
http://publicapps.odh.ohio.gov/Envlicense_Reports/External_License_Search.aspx?Program=Lead
 - c. Maternal blood lead level results should be conveyed to the pediatric health care provider
7. Any follow-up blood testing should occur according to Table 1 (on page 2)
8. Management of Elevated Maternal Blood Lead Levels (BLL) (see Table 2 on page 2)
 - a. Provide guidance on lead risk reduction and health education materials
 - b. Attempt to determine source(s) of lead exposure and counsel patient on reduction strategies
 - i. Refer to the Ohio Department of Health's Adult Blood Lead Epidemiology and Surveillance (ABLES) Program
 - a. 1-877-LEAD-SAFE
 - b. 1-614-728-4115 (ABLES Coordinator)
 - c. Assess nutritional adequacy (all pregnant women should have an individualized dietary assessment)
 - i. Eat frequent and regular meals. Environmental lead is more easily absorbed on an empty stomach
 - ii. Increase the amount of iron and calcium consumed
 - a. Iron (30 mg elemental daily; patients with anemia 60-120 mg daily)—fortified breads and cereals, cooked legumes (dried beans/peas), spinach, lean red meat
 - b. Calcium (2,000 mg daily)—either through diet (milk, yogurt, cheese, cooked greens, calcium fortified orange juice), supplement or a combination of the two.
 - d. Follow-up testing (See Table 1 on page 2)
 - e. Any children in the household should be screened
9. Breastfeeding
 - a. **Initiation of breastfeeding should be encouraged for mothers with BLLs <40 µg/dL** (micrograms per deciliter).
 - b. At BLLs between 20-39 µg/dL, breastfeeding should be initiated and accompanied by sequential infant BLLs to monitor trends.
 - c. A woman with a BLL ≥40 µg/dL should not initiate breastfeeding.
 - i. She may pump and discard her breast milk until her level declines to <40 µg/dL.

References

Guidelines for the Identification and Management of Lead Exposure in Pregnant and Lactating Women
(<http://www.cdc.gov/nceh/lead/publications/LeadandPregnancy2010.pdf>) and Centers for Disease Control and Prevention
"Lead-Pregnant Women" (<http://www.cdc.gov/nceh/lead/tips/pregnant.htm>)

Table 1: Follow-up Blood Lead Testing during Pregnancy

Venous^a Blood Lead Level (micrograms/dL)	Performance of follow-up test(s)
< 5 µg/dL	None Needed
5-14 µg/dL	Within 1 month. Obtain maternal BLL ^b or cord BLL at delivery.
15-24 µg/dL	Within 1 month and then every 2-3 months. Obtain maternal BLL ^b or cord BLL at delivery. More frequent testing may be indicated based on risk factor history.
25-44 µg/dL	Within 1-4 weeks and then every month. Obtain maternal BLL ^b or cord BLL at delivery.
≥ 45 µg/dL	Within 24 hours and then at frequent intervals depending on clinical interventions and trend in BLLs. Consultation with a clinician experienced in the management of pregnant women with BLLs in this range is strongly advised (Call Poison Control @ 1-800-222-1222). Obtain a maternal BLL or cord BLL at delivery.

^a Venous blood sample is recommended for maternal blood lead testing.

^b If possible, obtain a maternal BLL as early in pregnancy as possible.

Table 2: Management of Elevated Maternal Blood Lead Levels

BLL	Health Care Providers	Ohio Adult Blood Lead Epidemiology and Surveillance (ABLES) Program
< 5 µg/dL	<ul style="list-style-type: none"> Provide lead exposure and risk reduction health education materials to all pregnant and lactating women 	<ul style="list-style-type: none"> Collects all blood lead test results on all Ohio residents
5-9 µg/dL	Above actions plus <ul style="list-style-type: none"> Attempt to determine source(s) of lead exposure and counsel patients on strategies to reduce exposure For occupationally exposed women, review proper use of personal protective equipment and consider contacting employer Assess nutritional adequacy Follow-up testing 	As above
10-14 µg/dL	Above actions plus <ul style="list-style-type: none"> Notify Ohio ABLES program (1-877-LEAD SAFE) Recommend removal from exposure Assist Ohio ABLES program with complete exposure source assessment 	Above actions plus <ul style="list-style-type: none"> Contacts patient when notified and sends out health education materials to patient Recommends removal from exposure
15-44 µg/dL	As above	Above actions plus <ul style="list-style-type: none"> If an occupational exposure is identified, refers worksite for investigation to partnering occupational health organizations
≥ 45 ^a µg/dL	Above actions plus <ul style="list-style-type: none"> Treat as high risk pregnancy (consider consultation with a maternal-fetal medicine specialist) Consider in-patient chelation in consultation with a lead poisoning expert (Call Poison Control @ 1-800-222-1222) 	Above actions plus <ul style="list-style-type: none"> Facilitates consultation with an identified lead poisoning expert experienced in managing chelation in pregnant women

^a Blood lead levels ≥ 70 µg/dL may result in significant maternal toxicity; therefore, chelation should be considered regardless of trimester of pregnancy and in consultation with an identified lead poisoning expert.