



# 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](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)
  - 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.
- 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**

<b>Venous<sup>a</sup> Blood Lead Level (micrograms/dL)</b>	<b>Performance of follow-up test(s)</b>
< 5 µg/dL	None Needed
5-14 µg/dL	Within 1 month. Obtain maternal BLL <sup>b</sup> or cord BLL at delivery.
15-24 µg/dL	Within 1 month and then every 2-3 months. Obtain maternal BLL <sup>b</sup> 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 <sup>b</sup> 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 ( <a href="tel:1-800-222-1222">Call Poison Control @ 1-800-222-1222</a> ). Obtain a maternal BLL or cord BLL at delivery.

<sup>a</sup> Venous blood sample is recommended for maternal blood lead testing.

<sup>b</sup> If possible, obtain a maternal BLL as early in pregnancy as possible.

**Table 2: Management of Elevated Maternal Blood Lead Levels**

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

<sup>a</sup> 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.