Physician Guidelines – Childhood Lead Poisoning Prevention

The following information and flowcharts have been prepared by the Iowa Department of Public Health as guidelines that are to be followed by physicians and medical providers in Iowa as they seek to care for children 6 years of age and younger and their families in the prevention of childhood lead poisoning. Additional background information on childhood lead poisoning prevention can be found at the following webpages:

- Iowa Lead Poisoning Prevention Program: https://idph.iowa.gov/lpp
- Center for Disease Control: https://www.cdc.gov/nceh/lead/

The charts and their purposes on the following pages are:

1. Childhood Lead Poisoning Risk Questionnaire – this questionnaire is to be used to determine the risk classification (low-risk or high-risk) of the child which in turn specifies the child’s testing schedule.

2. Iowa Basic Lead Testing Chart – this chart outlines the testing schedule for children with low- and high- risk to lead poisoning. Nationally, Iowa housing ranks in the top ten in the number of homes built prior to 1950. Therefore, the majority of children in Iowa will be tested according to the high-risk testing schedule.

3. Schedule for Obtaining Confirmatory Venipunctures – this chart gives the time-frame for scheduling a child for confirmatory venous testing after receiving an elevated capillary test result equal to or greater than 10 micrograms per deciliter.

4. The charts on pages 5 to 8 give the management protocol for ranges of blood lead test results.

5. Timelines for Medical Follow-Up, Home Nursing Visit, Developmental Follow-Up, and Nutritional Follow-Up – these charts summarize the health follow-up for children with various venous blood lead levels.

6. Timelines for Environmental Follow-Up – this chart gives the timeframe for conducting an environmental inspection for lead sources when blood lead levels are within the ranges identified. Environmental inspections for lead are conducted by lead certified state or local childhood lead poisoning prevention program personnel.

Please contact the Iowa Department of Public Health at (800) 972-2026 if you have any questions with any part of these guidelines.
Childhood Lead Poisoning Risk Questionnaire

The following questions can be used to determine the general risk of lead poisoning for children. These questions are to be used by the medical provider to determine the schedule of blood lead testing for the child as outlined on the Blood Lead Testing Chart. These questions are not to be use by the physician to exempt a child from blood lead testing – this formal exemption is only provided by the Iowa Department of Public Health.

If the answer to any question is “Yes,” then the child is at high-risk for lead poisoning and must be tested according to the high-risk testing schedule. If the parent does not know the answer to a question, assume that the answer is “Yes.” If the child is at low-risk for lead poisoning, test according to the low-risk testing schedule.

1. Has your child ever lived in or regularly visited a house built before 1960? (Examples: home, day-care center, baby-sitter, relative’s home)  ___Yes  ___No
2. Have you noticed any peeling or chipping paint in or around the pre-1960 house that your child has lived in or regularly visited?  ___Yes  ___No
3. Is the pre-1960 home that your child has lived in or regularly visited been remodeled or renovated by: A. Stripping, sanding, or scraping paint on the inside or outside of the house; B. Removing walls and/or tearing out lath and plaster.  ___Yes  ___No
4. Does your child eat non-food items such as dirt?  ___Yes  ___No
5. Have any of your other children or their playmates had lead levels \( \geq 15 \) μg/dL?  ___Yes  ___No
6. Does your child live with or frequently come in contact with an adult who works with lead on the job or in a hobby? (Examples: painter, welder, foundry worker, old home renovator, shooting range worker, battery plant worker, battery recycling worker, ceramics worker, stained glass worker, sheet metal worker, scrap metal worker, plumber)  ___Yes  ___No
7. Does your child live near a battery plant, battery recycling plant, or lead smelter?  ___Yes  ___No
8. Do you give your child any home or folk remedies? (Ex: Azarcon, greta, pay-loo-ah)  ___Yes  ___No
9. Does your child eat candy that is produced in Mexico, Central America or Southeast Asia?  ___Yes  ___No
10. Has your child ever lived in Mexico, Central America, South America, Africa, Asia, or Eastern Europe, or visited one of these areas for a period longer than two months?  ___Yes  ___No
IOWA BASIC LEAD TESTING CHART
(Based on Risk and Age)

RISK CLASSIFICATION

Low-Risk Testing Schedule

Test at ages of 12 & 24 months.

If older than 24 months & no previous test, test at once.

Continue to assess risk.

No additional testing needed if risk does not change.

High-Risk Testing Schedule

Test at ages of
12 months
18 months
24 months
3 years
4 years
5 years

If CAPILLARY samples are used, see page 4 for follow-up of any level ≥10μg/dL.
If VENOUS samples are used, see pages 5-8 for follow-up of any level ≥5μg/dL.
SCHEDULE FOR OBTAINING CONFIRMATORY VENIPUNCTURES

Capillary Blood Lead Level

- <10 µg/dL
  - Continue routine blood lead testing
- 10-14 µg/dL
  - Within 12 weeks.
- 15-19 µg/dL
  - Within 4 weeks.
- 20-44 µg/dL
  - Within 1 week.
- 45-69 µg/dL
  - Within 48 hours.
- ≥70 µg/dL
  - Immediately.

If venous level <10 µg/dL, return to regular screening schedule.
If venous level 10-14 µg/dL, follow chart for levels of 10-14 µg/dL.
If venous level 15-19 µg/dL, follow charts for levels of 15-19 µg/dL.
If venous level ≥20 µg/dL, follow chart for levels ≥20 µg/dL
BLOOD LEAD LEVELS
(5-9 µg/dL)

Continue routine blood lead testing.

Education about lead poisoning, importance of good nutrition and good housekeeping

If any capillary retest is greater than or equal to 10 µg/dL, follow confirmatory venipuncture schedule.

If any venous retest is greater than or equal to 10 µg/dL, follow charts for confirmed venous levels.

September 2017
FOLLOW-UP OF ELEVATED VENOUS BLOOD LEAD LEVELS (10-14 µg/dL)

Retest every 12 weeks.

Provide information to family about lead poisoning, importance of good nutrition and good housekeeping.
Test for iron deficiency

After two levels less than 10 µg/dL or three levels less than 15 µg/dL, return to regular high-risk testing schedule.

If any capillary retest is greater than or equal to 15 µg/dL, follow confirmatory venipuncture schedule.

If any venous retest is greater than or equal to 10 µg/dL, follow charts for confirmed venous levels.
FOLLOW-UP OF ELEVATED VENOUS BLOOD LEAD LEVELS (15-19 µg/dL)

Venous level retest every 12 weeks.

Refer to dietician.  
Public health nurse visit.  
Test for iron deficiency.

An environmental investigation is to be completed by a public health agency after two venous levels of 15-19 µg/dL µg/dL.

After two venous levels less than 10 µg/dL or three levels less than 15 µg/dL, return to regular high-risk testing schedule.

If any retest is greater than or equal to 20 µg/dL, use follow-up charts for confirmed venous levels greater than or equal to 20 µg/dL.
FOLLOW-UP OF ELEVATED VENOUS BLOOD LEAD LEVELS
(Greater than or equal to 20 μg/dL)

Refer to dietician.
Refer for medical evaluation and follow-up.
Refer for developmental evaluation
Environmental investigation.
Public health nurse visit

Chelation (only at 45μg/dL or greater).
For outpatient chelation, child must be in lead-safe environment.
For inpatient chelation, child must return to a lead-safe environment.
Refer all chelation cases to Iowa Statewide Poison Control Center

Venous blood lead at end of chelation and 21 days after treatment if outpatient, or 7 days if inpatient

Frequent medical follow-up.
Venous blood lead every 4 to 6 weeks if no additional chelation.

No chelation.

Venous blood lead test every four to six weeks until level drops to less than 20 μg/dL

Frequent medical follow-up.

After venous blood lead level drops to less than 20 μg/dL, test every 12 weeks until two levels less than 10 μg/dL or three levels less than 15 μg/dL.

September 2017
TIMELINES FOR MEDICAL FOLLOW-UP, HOME NURSING VISIT, DEVELOPMENTAL FOLLOW-UP,* AND NUTRITIONAL FOLLOW-UP

Venous Blood Lead Level

15-19 µg/dL
- Refer within 4 weeks.
  - Nutrition follow-up within 6 weeks total.

20-44 µg/dL
- Refer within 48 hours.
  - Medical evaluation, home nursing visit, and nutrition follow-up within 5 days total.

45-69 µg/dL
- Refer within 24 hours.
  - Medical evaluation, home nursing visit, and nutrition follow-up within 48 hours total.

≥70 µg/dL
- Immediately.
  - Emergency medical evaluation, home nursing visit, and nutrition follow-up.

*Note that developmental evaluation is expected only for children with venous blood lead levels greater than or equal to 20 µg/dL.
TIMELINES FOR ENVIRONMENTAL FOLLOW-UP

Venous Blood Lead Level

- Two levels of 15-19 µg/dL: Investigate within 4 weeks.
- 20-44 µg/dL: Investigate within 10 working days.
- 45-69 µg/dL: Investigate within 5 working days.
- ≥70 µg/dL: Investigate within 24-48 hours.
## GUIDELINES FOR DETECTION AND MANAGEMENT OF ASYMPTOMATIC LEAD-POISONED CHILDREN

For Physicians and Health Care Providers

<table>
<thead>
<tr>
<th>BLOOD LEAD LEVEL in µg/dL (micrograms per deciliter)</th>
<th>TREATMENT</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 µg/dL capillary or venous</td>
<td>• Continue routine blood lead testing. (See Iowa Basic Lead Testing Chart)</td>
<td>• Child does not have abnormal lead level</td>
</tr>
<tr>
<td>5–9 µg/dL (capillary or venous)</td>
<td>• Continue routine blood lead testing. (See Iowa Basic Lead Testing Chart)</td>
<td>• Child has elevated blood lead, routine testing recommended</td>
</tr>
<tr>
<td>≥10 µg/dL (capillary)</td>
<td>• Order venous blood lead level.</td>
<td>• Further action based on venous blood lead level.</td>
</tr>
<tr>
<td>10–14 µg/dL (venous)</td>
<td>• Capillary or venous retest within three months (12 weeks).</td>
<td>• Provide information to family regarding lead poisoning, importance of good nutrition, and housekeeping.</td>
</tr>
<tr>
<td></td>
<td>• Test for iron deficiency using hematocrit or hemoglobin.</td>
<td></td>
</tr>
<tr>
<td>15–19 µg/dL (venous)</td>
<td>• Venous retest in 3 months (12 weeks).</td>
<td>• Refer to dietician for nutrition evaluation.</td>
</tr>
<tr>
<td></td>
<td>• Test for iron deficiency using hematocrit or hemoglobin.</td>
<td>• Refer for public health nursing visit.</td>
</tr>
<tr>
<td>20–44 µg/dL (venous)</td>
<td>• Pediatric evaluation.</td>
<td>• Environmental investigation by public health agency.</td>
</tr>
<tr>
<td></td>
<td>• Venous retest in 4 to 6 weeks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Test for iron deficiency using serum iron and iron binding capacity or serum ferritin.</td>
<td></td>
</tr>
<tr>
<td>45–69 µg/dL (venous)</td>
<td>• Pediatric evaluation.</td>
<td>• Refer to dietician for nutrition evaluation.</td>
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<td>• Test for iron deficiency using serum iron and iron binding capacity or serum ferritin.</td>
<td>• Refer for public health nursing visit.</td>
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<td></td>
<td>• Inpatient or outpatient chelation*. Venous retest before chelation, at the end of chelation, and 21 days after chelation.</td>
<td>• Environmental investigation by public health agency and must verify that home is lead-safe before child can return home.</td>
</tr>
<tr>
<td>≥70 µg/dL (venous) MEDICAL EMERGENCY!!</td>
<td>• Pediatric evaluation.</td>
<td>• Refer to dietician for nutrition evaluation.</td>
</tr>
<tr>
<td></td>
<td>• Test for iron deficiency using serum iron and iron binding capacity or serum ferritin.</td>
<td>• Refer for public health nursing visit.</td>
</tr>
<tr>
<td></td>
<td>• Inpatient chelation*. Venous retest before chelation, at the end of chelation, and 7 days after chelation.</td>
<td>• Environmental investigation by public health agency and must verify that home is lead-safe before child can return home.</td>
</tr>
</tbody>
</table>

*For detailed recommendations regarding chelation, contact the Iowa Statewide Poison Control Center at 1-800-222-1222. Rev. 9/2017