City Health Information

March 2007 The New York City Department of Health and Mental Hygiene Vol. 26(3):15–22

LEAD POISONING: PREVENTION, IDENTIFICATION, AND MANAGEMENT

For Pediatric Patients

- **Educate parents annually on how to prevent lead exposure.**
- **Test all children at ages 1 and 2, and other children at risk of lead exposure.**
- **Assess children up to 6 years of age annually for risk of lead exposure.**

For Obstetric Patients

- **Educate all pregnant women on how to prevent lead exposure.**
- **Test pregnant women at risk of lead exposure.**
- **Assess all pregnant women for risk of lead exposure at the first prenatal visit.**

Lead poisoning remains a significant health problem in New York City (NYC). In young children, exposure to lead can result in long-lasting neurological damage, including learning and behavioral problems and lowered intelligence. Health effects of lead poisoning may persist long after a child's blood lead level (BLL) has declined and may go undetected until the child enters school.

Most people with lead poisoning show no clinical symptoms. Thus, blood lead tests are routinely required for diagnosis. New York State (NYS) law requires blood lead testing for every child at both 1 and 2 years of age and for other children found to be at risk. However, in 2005 only 72% of 1-year-olds and 60% of 2-year-olds in NYC were tested, and only 37% of children had been tested at both ages.[1]

Fetal exposure to lead may also adversely affect neurodevelopment.[2] A pregnant woman with an elevated BLL can pass the lead to her developing fetus; children born with elevated BLLs may suffer cognitive and developmental problems as a result of prenatal exposure.

Recent research shows that adverse health effects may occur at BLLs <10µg/dL[3-5] and that more people may be affected than previously recognized (**Table 1**). Health care providers can help by educating families on ways to prevent lead exposure, and by identifying lead poisoning early through blood lead testing.

TAKE CARE NEW YORK

PART 1: PREVENTING, IDENTIFYING, AND MANAGING CHILDREN WITH BLLS ≥5µg/dL

Profile of NYC Lead-Poisoned Children

Lead poisoning can affect children of all ages, races, and income groups, but certain populations are at greater risk. These groups include children less than 3 years of age, low-income children living in older, deteriorated housing, and children of color. In addition, children born outside the United States (US) are over-represented among lead-poisoned children in NYC. In 2005, of the children newly identified with venous BLLs ≥15µg/dL:

- 89% were black, Asian, or Hispanic;
- 86% lived in homes built before 1950;
- 77% had lead-based paint hazards found on inspection of their addresses;
- 58% were less than 3 years old;
- 20% were foreign-born.[1]

Annually educate parents of children 6 months to 6 years of age by providing anticipatory guidance as required by NYS law.[6]

Helping parents minimize their children's exposure to lead is the best way to prevent the developmental and cognitive deficits associated with lead poisoning. Provide parents with the following educational messages:

- Keep your child away from peeling paint and home repairs that disturb lead paint;
- Report peeling paint to your landlord. If your landlord does not make repairs, call 311;
- Frequently wash hands, toys, pacifiers, bottles, and other items your child puts in his or her mouth;
- Clean floors, windowsills, and dusty places often with wet mops and wet cloths;
- Avoid using health remedies and eye cosmetics (such as kohl, kajal, surma) from other countries. Some of these products have been found to contain high levels of lead;
- Use caution when using candies, spices, snack foods, and children's toys and jewelry made in other countries. These items may contain lead;
- Use only cold tap water for making baby formula, drinking, and cooking. Let the water run for a few minutes before use;
- Keep your child away from the work clothes and tools of household members who do construction work or other work and hobbies that may expose them to lead. Wash work clothes separately from other laundry. Remove shoes and work clothes before entering your home;
- Use safe work methods when doing home repair that disturbs paint. For information on lead-safe work methods, call 311.

Test all children at ages 1 and 2, and test other children found to be at risk. Annually assess children from 6 months to 6 years of age for lead exposure risk.[6]

Children between 9 months and 36 months of age are at risk of lead exposure due to normal hand-to-mouth toddler behavior. Rapid growth and development at these ages also makes them more vulnerable to lead's toxic effects.

Household lead exposure, in either the child's home or homes they regularly visit, remains a concern. Although lead-based paint for residential use in NYC was banned in 1960, about 67% of NYC housing was built before 1960.

TABLE 1: NEWLY REPORTED BLOOD LEAD LEVELS ≥5µg/dL AMONG CHILDREN AND WOMEN OF REPRODUCTIVE AGE IN NYC*

BLL	Children (6 months–5 years)	Children (6–17 years)	Women of Reproductive Age (18–49 years)	Infants (0–5 months)
5–9µg/dL	25,337	3,451	2,304	178
10–14µg/dL	1,774	362	211	35
≥15µg/dL	870	123	135	26
Total	27,981	3,936	2,650	239

*Based on New York City Department of Health and Mental Hygiene, Lead Poisoning Prevention Program. Unpublished 2005 data.

Use the "Recommended Lead Risk Assessment Questions for Parents" (**Table 2**) to assess potential lead exposure in a child. If the parent answers "yes" to any of these questions, the child should have a blood lead test (preferably venous, see **Box** below). If potential exposures are noted during the risk assessment, emphasize the educational messages on page 16 that address those exposures.

Foreign-born children up to 17 years of age, particularly children who are refugees or internationally adopted, should have their BLLs tested when they arrive in the United States and again 3–6 months after they receive permanent placement.[7] Blood lead tests should also be considered for older children with a history of an elevated BLL, foreign residency, or developmental delay.

Management of Children With Blood Lead Levels ≥5µg/dL

Children with BLLs ≥5µg/dL require follow-up management (**Table 3**). The actions recommended are based upon the BLL and should always include providing educational messages (see page 16) and BLL monitoring (**Table 4**). Children with venous BLLs ≥45µg/dL typically require hospitalization and chelation therapy in consultation with a lead expert. For more information on chelation therapy, see "Recommended Chelation Protocol for Children with BLLs ≥45µg/dL" on the NYC Department of Health and Mental Hygiene (DOHMH) Web site (**Resources**).

VENOUS VS FINGERSTICK BLOOD LEAD SPECIMENS

Venous specimens are more accurate than fingerstick specimens. Environmental contamination of fingerstick specimens can result in false positives, and finger squeezing can dilute blood and result in false negatives. All fingerstick blood lead results ≥10µg/dL must be confirmed with venous specimens within the time frames specified in Table 4. For information on the best practices for collecting fingerstick specimens, please see the CDC's "Capillary Blood Sampling Protocol" (**Resources**).

If blood lead specimens are being analyzed in the office and are not being submitted to a clinical laboratory, the health care provider must report the blood lead results within 5 business days to the NYC Department of Health and Mental Hygiene (DOHMH) by fax (212) 676-6326.[8]

TABLE 2. RECOMMENDED LEAD RISK ASSESSMENT QUESTIONS FOR PARENTS

1. Is your child between 9 and 36 months of age?
2. Have any of your children or their playmates ever had a high blood lead level?
3. Does your child live in, or regularly visit, an older home or other place with peeling or damaged paint?
4. Does your child live in, or regularly visit, an older home or other place that is being or was renovated within the last 12 months?
5. Does your child have any developmental delays, have hand-to-mouth behavior, or put non-food items, such as paint chips or soil, in their mouth?
6. Has your child moved to the US from or traveled to a foreign country where lead poisoning may be common?*
7. Does your family use products from other countries such as health remedies, spices, food, or pottery?
8. Does your child play near a heavily traveled highway, bridge, or elevated train where there is peeling paint?
9. Does your child come into contact with an adult whose job or hobby involves exposure to lead (e.g., bridge painting and repair, building demolition, home renovation and repair, automotive and electronics repair, furniture refinishing, working with firearms, and arts/crafts work involving ceramics, metals, and color pigments)?
10. Is your child enrolled in or planning to enroll in Medicaid or the NYC Early Intervention Program?†

*In descending order of frequency, lead poisoning has been found in NYC children emigrating from Haiti, Mexico, Pakistan, Bangladesh, Dominican Republic, India, Guyana, China, Liberia, Guinea, Ecuador, Jamaica, Albania, Senegal, Guatemala, Nigeria, Ghana, countries comprising former Yugoslavia, United Kingdom, Honduras, Israel, Togo, Sierra Leone, Ivory Coast, Trinidad and Tobago, United Arab Emirates, Georgia, Portugal, Suriname, Morocco, Afghanistan, Mauritania, Thailand, Uzbekistan, Canada, Nepal, El Salvador, and Gambia.

†Medicaid requires a blood lead test for children up to age 6 not previously tested.[9] Enrollment in preschool/daycare[10] and the Early Intervention Program[11] both require BLL documentation.

TABLE 3: RECOMMENDED MANAGEMENT OF CHILDREN BASED ON BLOOD LEAD LEVELS[12]

BLL (µg/dL)	Recommended Action
5–9	• Recognize that a BLL of 5–9µg/dL may indicate lead exposure. • Provide educational messages (see page 16). • Evaluate for adequate intake of calcium, iron, and vitamin C.* • If initial positive test is a fingerstick specimen, confirm with a venous specimen within time frame specified in **Table 4**. • Monitor BLLs by retesting as per follow-up schedule in **Table 4**.
10–14	**All actions for BLLs of 5-9µg/dL, plus:** • Report BLL to NYC DOHMH within 24 hours by fax (212) 676-6326.[13] Laboratory requisition forms must include: Patient's complete name, date of birth, complete address (including apartment number), and phone number. Health care provider name and phone number. Type of sample (venous or fingerstick) and date of collection. • DOHMH will send educational information to the family and health care provider.
15–44	**All actions for BLLs 5-14µg/dL, plus:** • Provide a complete medical evaluation including a detailed environmental history, thorough developmental and nutritional assessment, and physical exam. • Evaluate for iron deficiency anemia, often associated with lead poisoning. • Consider abdominal x-ray if paint chip or other lead solid ingestion suspected; if radio-opaque particles found or recent ingestion witnessed, use cathartic. • Consider monitoring erythrocyte protoporphyrin levels (EP) for BLL ≥25µg/dL to help assess timing of exposure.† • Monitor development even after BLLs decrease. Consider this child at higher risk for developmental delays and behavior problems. • DOHMH will: Inspect the child's home to identify potential lead sources. Order the landlord to repair any lead paint hazards identified. Refer families to temporary, lead-safe housing as necessary. Refer children < 36 months of age to DOHMH Early Intervention Program.
≥45	**All actions for BLLs 5-44µg/dL, plus:** • Arrange hospitalization and chelation therapy at a facility with expertise in treating lead-poisoned children (see "Recommended Chelation Protocol for Children with BLLs ≥45µg/dL" on the DOHMH Web site (**Resources**). • Perform complete neurological exam. • Confirm BLL with venous specimen processed as emergency test before providing chelation therapy, unless symptoms of encephalopathy are present. • Obtain abdominal x-ray to look for paint chip or other lead solid ingestion; if radio-opaque particles found or recent ingestion witnessed, use cathartic. • Child must receive chelation therapy in, and be discharged to, a lead-safe environment. Do not discharge until DOHMH inspects the home. • Inform NYC DOHMH of hospital admission by calling (212) 676-6100. • DOHMH can provide the following additional services: Same-day BLL processing. Referrals to facilities and providers with expertise in treating lead-poisoning. For treatment consultations on evenings or weekends, call Poison Control Center at 311. Referrals to temporary lead-safe housing.

* Adequate stores of calcium and iron may decrease gastrointestinal absorption of lead. Vitamin C may increase renal excretion.

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

TABLE 4: FOLLOW-UP BLOOD LEAD TEST SCHEDULES FOR CHILDREN

For Fingerstick BLLs ≥5µg/dL[12]

Capillary Test Result (µg/dL)	Time Frame for Confirmatory Venous Test
5–9	3–6 months*
10–14	3 months†
15–44	1 week–1 month‡
≥45	Immediately

For Venous BLLs ≥5µg/dL[12]

Venous BLL (µg/dL)	Early Follow-up Test (first 2–4 tests after identification)	Late Follow-up Test (after BLL begins to decline)
5–9	3–6 months*	6–12 months
10–14	3 months†	6–9 months
15–19	1–3 months†	3–6 months
20–24	1–3 months†	1–3 months
25–44	2 weeks–1 month	1 month
≥45	As soon as possible	Chelation with subsequent follow-up

* Recognize that a BLL of 5–9 may indicate lead exposure. If risk assessment indicates exposure is likely, consider retesting within 3 months to confirm BLL is not rising rapidly.

† Health care providers may choose to repeat BLLs within 1 month for patients newly identified with an elevated BLL to confirm that BLL is not rising rapidly.

‡ The higher the BLL, the sooner confirmatory venous testing should occur.

PART 2: PREVENTING, IDENTIFYING, AND MANAGING PREGNANT WOMEN WITH BLOOD LEAD LEVELS ≥5µg/dL

Research suggests that lead poisoning during pregnancy is associated with spontaneous abortion, premature birth, maternal hypertension, and decreased fetal growth. Elevated maternal BLLs may reflect recent exposure to exogenous lead sources and/or mobilization of endogenous bone stores. During pregnancy, when maternal bone stores of calcium are released into the bloodstream to support development of the fetal bone structure, bone stores of lead from past exposure may also be released.

TABLE 5. RECOMMENDED LEAD RISK ASSESSMENT QUESTIONS FOR PREGNANT WOMEN

1. Have you ever had a high blood lead level?
2. Were you born, or have you spent any time, outside of the United States?*
3. During the past 12 months, did you use any products from other countries, such as health remedies, spices, foods, ceramics, or cosmetics?
4. At any time during your pregnancy, did you eat, chew on, or put in your mouth any non-food items such as clay, crushed pottery, soil, or paint chips?
5. In the last 12 months, has there been any renovation or repair work in your home?
6. Do you now have, or have you ever had, a job or hobby that could expose you to lead, such as construction work, home renovation/repair, furniture refinishing, working with firearms, or arts/crafts work involving ceramics, stained glass, metals, or color pigments?

*In descending order of frequency, lead poisoning has been found in NYC pregnant women emigrating from Mexico, Bangladesh, India, Pakistan, Russia, Ecuador, Georgia, Haiti, Jamaica, Morocco, Dominican Republic, Guatemala, and Guyana.

In NYC, approximately 95% of the pregnant women found to have elevated BLLs are foreign-born.[1] Therefore, prenatal medical practices that predominantly serve foreign-born women may elect to routinely test all pregnant women at their first prenatal visit.

Educate all pregnant women about how to prevent lead poisoning during pregnancy by providing anticipatory guidance as required by NYS law.[14]

Provide the following educational messages to all pregnant women. Women of childbearing age could benefit from these messages as well:

- Avoid using health remedies and eye cosmetics (such as kohl, kajal, surma) from other countries. Some of these products have been found to contain high levels of lead;
- Use caution when using candies, spices, and snack foods made 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;

TABLE 6: RECOMMENDED MANAGEMENT OF PREGNANT WOMEN BASED ON BLOOD LEAD LEVELS

BLL (µg/dL)	Time Frame for Action	Recommended Action	Frequency of Follow-up Venous Blood Testing
5 – 9	Within 30 days	• Assess for risk factors. • Provide educational messages (see pages 19 and 21). • Evaluate for adequate intake of calcium, iron, and vitamin C.* • Monitor BLL.	• Repeat after interval of at least 1 month to assess trend. • Repeat each trimester.
10 –14	Within 30 days	**All actions for BLLs 5-9µg/dL, plus:** • Notify DOHMH within 24 hours as required by NYC Health Code.[13] Fax reports to (212) 676-6188 or call (212) 676-6379. • Refer to occupational health clinic if occupational exposure is suspected. • DOHMH will mail educational materials to the woman and her health care provider.	• Repeat after interval of at least 1 month to assess trend. • Repeat each trimester.
15 – 44	Within 2 weeks	**All actions for BLLs 5-14µg/dL, plus:** • Evaluate for other symptoms.† • Consider monitoring erythrocyte protoporphyrin levels (EP) when BLL ≥25 µg/dL to help assess timing of exposure.‡ • DOHMH will: Conduct home visits to identify potential exposure sources. Recommend strategies to reduce exposure.	• Within 2 weeks and then monthly to assess efficacy of management.
≥45	Within 24 hours	**All actions for BLLs 5-44µg/dL, plus:** • Confirm BLL with venous sample. • Consult with DOHMH and lead poisoning specialist to consider hospitalization and chelation therapy with $CaNa_2EDTA$ if pregnancy is in late 2nd or 3rd trimester.§ • Monitor erythrocyte protoporphyrin levels (EP) to help assess timing of exposure.‡	• Within 24 hours and then at frequent intervals depending on clinical management and BLL trend.

*Adequate stores of calcium and iron may decrease gastrointestinal absorption of lead. Adequate stores of calcium may decrease mobilization of lead from maternal bone. Vitamin C may increase renal excretion.

† The majority of people with lead poisoning have no symptoms. Symptoms including headaches, crampy abdominal pain, anorexia, constipation, fatigue, malaise, myalgias and arthralgias typically occur at BLLs ≥60µg/dL, but can occur at BLLs ≥25µg/dL.

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

§When BLLs ≥45µg/dL are noted in the first half of pregnancy, chelation therapy is NOT recommended. Management consists of limiting further lead exposure by identifying potential exposure sources, recommending strategies to reduce exposure, and promoting adequate intake of calcium, iron, and vitamin C.

- Never eat non-food items, such as clay, soil, pottery, or paint chips;
- Stay away from any repair work being done in the home;
- Avoid jobs or hobbies that may involve contact with lead, such as construction work, home renovation/repair, furniture refinishing, working with firearms, and arts/crafts work involving ceramics, stained glass, metals, or color pigments.

Test pregnant women at risk of lead exposure after assessing risk during first prenatal visit.[14]

Use the "Recommended Lead Risk Assessment Questions for Pregnant Women" (**Table 5**) to assess potential lead exposure. If a pregnant woman answers "yes" to any of these questions, she should have a blood lead test. If potential exposures are noted during the risk assessment, the health care provider should emphasize the educational messages (page 19 and above) that address those exposures.

Management of Pregnant Women with Blood Lead Levels ≥5µg/dL.

Guidelines for managing pregnant women with elevated BLLs are summarized in **Table 6**. In addition, postpartum care should include a maternal BLL and umbilical cord BLL drawn at delivery and another maternal BLL drawn one month after delivery. The many benefits of breastfeeding must be weighed against the potential risks of lead exposure on a case-by-case basis. When advising your patient about breastfeeding, consultation with a lead poisoning specialist is recommended. In addition, care of the newborn should be coordinated with the pediatric health care provider. The DOHMH recommends that the BLL of newborns prenatally exposed to lead be monitored for the first 6 months of life as per **Table 7**.◆

TABLE 7: RECOMMENDED BLOOD TEST SCHEDULE FOR LEAD-EXPOSED INFANTS (0-5 MONTHS OF AGE)

Umbilical Cord BLL at Delivery (µg/dL)	Initial Infant Venous Test	Follow-up Infant Venous Tests
0–4	None	Based on infants's risk of current exposure
5–14	Within 1 month	Every 3 months
15–24	Within 1 month	Every 1-3 months
25–44	Within 2 weeks	Every 2 weeks – 1 month
≥45	As soon as possible	Depends on clinical management*

*Collaborate with DOHMH and an experienced lead poisoning specialist.

RESOURCES AND ADDITIONAL INFORMATION FOR HEALTH CARE PROVIDERS

- Report BLLs ≥10µg/dL within 24 hours:
  Pregnant women BLL results, fax to **(212) 676-6188** or call **(212) 676-6379**.
  Children BLL results, fax to **(212) 676-6326** or call **(212) 676-6158**.
- Access the DOHMH Online Registry at www.nyc.gov/html/doh/html/cir/a01.html to check children's blood lead and immunization records. Call **(212) 676-2323** to obtain a user ID and password.
- Obtain patient educational materials on lead poisoning prevention for your office at DOHMH Web site www.nyc.gov/lead, or call **311** and ask for the BAN-LEAD information line.
- Call **(212) 676-6100** to request a telephone consultation with a DOHMH physician about a lead-poisoned child or pregnant woman.
- Consult the CDC report "Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention" (CDC, March 2002) at www.cdc.gov/nceh/lead/CaseManagement/caseManage_main.htm.
- Consult "Recommended Chelation Protocol for Children with BLLs ≥45µg/dL" at the DOHMH Web site: www.nyc.gov/health/lead/chelation.
- Consult the CDC's "Capillary Blood Lead Sampling Protocol" at www.cdc.gov/nceh/lead/guide/1997/pdf/c2.pdf.
- For more information on imported products that contain lead, visit the following DOHMH Web sites:
  www.nyc.gov/html/doh/html/lead/lead-import-eyecos.shtml
  www.nyc.gov/html/doh/html/lead/lead-herbalmed.shtml

REFERENCES

1. New York City Childhood Lead Poisoning Program, Annual Report 2005. New York: New York City Dept. of Health and Mental Hygiene; In press.
2. Bellinger, DC. Teratogen update: lead and pregnancy. *Birth Defects Res A Clin Mol Teratol.* 2005;73(6):409–420.
3. Canfield RL, Henderson CR Jr., Cory-Slechta DA, Cox C, Jusko T, Lamphear BP. Intellectual impairment in children with blood lead concentrations below 10 µg per deciliter. *N Engl J Med.* 2003;348(16):1517–1526.
4. Lanphear BP, Hornung R, Khoury J, et al. Low level environmental lead exposure and children's intellectual function: an international pooled analysis. *Environ Health Perspect.* 2005;113(7):894–899.
5. Centers for Disease Control and Prevention. Preventing Lead Poisoning in Young Children. Atlanta, Ga: CDC; 2005.
6. 10 NYCRR Subpart §67–1.2.
7. Based on: CDC Recommendations for Lead Poisoning Prevention in Newly Arrived Refugee Children Resettlement Work Module, 2006.
8. 24 RCNY §11.06.
9. Centers for Medicare & Medicaid Services. State Medicaid Manual. Appropriate laboratory testing. §5123.2D.
10. 10 NYCRR. Subpart §67–1.4.
11. 24 RCNY §11.04 and 11.07(d).
12. Based on: Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Centers for Disease Control and Prevention. Atlanta, Ga: CDC; 2002.
13. 24 RCNY §11.03.
14. 10 NYCRR Subpart §67–1.5

RECEIVE CHI BY E-MAIL Each time ***City Health Information*** is published you will receive a link to the issue in PDF format. To subscribe, visit www.nyc.gov/html/doh/html/chi/chi.shtml.

City Health Information

March 2007 The New York City Department of Health and Mental Hygiene Vol. 26(3):15–22

NYC Health

2 Lafayette Street, 20th Floor, CN-65, New York, NY 10007 (212) 676-2188

PRST STD
U.S. POSTAGE
PAID
NEW YORK, N.Y.
PERMIT NO. 6174

Email *City Health Information* at: nycdohrp@health.nyc.gov
Suggested citation: Ehrlich J, Nagin D, Greene D, Clark N, Leighton J. Lead Poisoning: Prevention, Identification, and Management. *City Health Information.* 2007;26(3):15–22.

Continuing Education Activity

Lead Poisoning: Prevention, Identification, and Management

SPONSORED BY

THE NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE (DOHMH)

CITY HEALTH INFORMATION

MARCH 2007 VOL. 26(3):15-22

Objectives

At the conclusion of the activity, the participants should be able to:

1. Understand when to test and assess children and pregnant women for lead exposure.
2. State the risk factors for lead exposure in children and pregnant women.
3. Summarize the key educational messages for minimizing lead exposure in children and pregnant women.

Accreditation

The DOHMH is accredited by the Medical Society of the State of New York to sponsor continuing medical education for physicians. The DOHMH designates this educational activity for a maximum of 1.5 *AMA PRA Category 1 Credits*™. Each physician should claim only those hours of credit that were spent on the educational activity.

Participants are required to submit name, address, and professional degree. This information will be maintained in the Department's CME program database. If you request, the CME Program will verify your participation and whether you passed the exam.

We will not share information with other organizations without your permission, except in certain emergencies when communication with health care providers is deemed by the public health agencies to be essential or when required by law. Participants who provide e-mail addresses may receive electronic announcements from the Department about future CME activities as well as other public health information.

Participants must submit the accompanying exam by March 31, 2008.

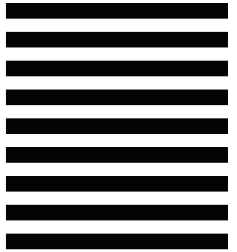
CME Activity Faculty:

Jessica Leighton, PhD; Nancy Clark, MA, CIH; Deborah Nagin, MPH; Jacqueline Erlich, MD, MPH; Danielle Greene, DrPH

All faculty are affiliated with the New York City DOHMH, Bureau of Environmental Disease Prevention.

The faculty does not have any financial arrangements or affiliations with any commercial entities whose products, research, or services may be discussed in this issue.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO.2379 NEW YORK NY

POSTAGE WILL BE PAID BY ADDRESSEE

CME ADMINISTRATOR
NYC DEPARTMENT OF HEALTH
AND MENTAL HYGIENE
2 LAFAYETTE ST, CN - 65
NEW YORK, NY 10277-1632

CME Activity **Lead Poisoning: Prevention, Identification, and Management**

1. Health care providers caring for young children or pregnant women should do all of the following EXCEPT:

A. Provide anticipatory guidance on how to prevent lead exposure.
B. Identify patients exposed to lead.
C. Assess for risk of lead exposure.
D. Test those found to be at risk of lead exposure.
E. Use erythrocyte protoporphyrin levels to screen for lead exposure.

2. All of the following children are at known risk of lead exposure and should be tested EXCEPT:

A. 6-month-old child adopted from China whose father is an investment banker.
B. 2-year-old child born in the US whose father is an investment banker.
C. 3-year-old child born in the US whose home has peeling paint.
D. 5-year-old child born in the US whose father is an investment banker.
E. 10-year-old, developmentally delayed child with hand-mouth behavior.

3. All of the following women are at risk of lead exposure and should be tested EXCEPT:

A. A pregnant woman who mentions using imported spices from India.
B. A pregnant woman who mentions eating a lot of salmon.
C. A pregnant woman who worked with stained glass 5 years ago.
D. A pregnant woman who moved to the US from Mexico 5 years ago.
E. A pregnant woman currently renovating a bedroom for her newborn.

4. During the management of a child or pregnant woman with a blood lead level (BLL) of 9µg/dL, the health care provider should do all of the following EXCEPT:

A. Recognize that a BLL of 5-9 indicates lead exposure.
B. Provide risk reduction information.
C. Evaluate for adequate intake of calcium, iron and vitamin C.
D. Report BLL to NYC DOHMH within 24 hours as required by law.
E. Monitor BLLs until the level falls below 5µg/dL.

5. Which one of the statements below is false?

A. BLLs <10µg/dL have been associated with adverse health effects.
B. Venous blood lead specimens are more accurate than fingerstick specimens.
C. Most people with lead poisoning have symptoms.
D. Bone stores of lead from past exposure may be mobilized during pregnancy.
E. Erythrocyte protoporphyrin levels can help to assess timing of exposure.

6. How well did this continuing education activity achieve its educational objectives?

❑ A. Very well ❑ B. Adequately ❑ C. Poorly

PLEASE PRINT LEGIBLY.

Name _____ Degree _____

Address _____

City _____ State _____ Zip _____

Date _____ Telephone _____

E-mail address _____

Continuing Education Activity

This issue of *City Health Information*, including the continuing education activity, can be downloaded from the publications section at nyc.gov/health. To access *City Health Information* and Continuing Medical Education online, visit www.nyc.gov/html/doh/html/chi/chi.shtml.

Instructions

Read this issue of *City Health Information* for the correct answers to questions. To receive continuing education credit, you must answer 4 of the first 5 questions correctly.

To Submit by Mail

1. Complete all information on the response card, including your name, degree, mailing address, telephone number, and e-mail address. PLEASE PRINT LEGIBLY.

2. Select your answers to the questions and check the corresponding boxes on the response card.

3. Return the response card (or a photocopy) postmarked **no later than March 31, 2008.** Mail to:

CME Administrator, NYC Dept. of Health and Mental Hygiene,
2 Lafayette, CN-65, New York, NY 10277-1632.

To Submit Online

Visit www.nyc.gov/html/doh/html/chi/chi.shtml to complete this activity online. Your responses will be graded immediately, and you can print out your certificate.