

New York City Childhood Lead Poisoning Prevention Program

Annual Report 2003

New York City Childhood Lead Poisoning Prevention Program

Annual Report 2003

*New York City
Department of Health and Mental Hygiene*



nyc.gov/health

December 2004

Acknowledgments

The Annual Report 2003 of the Lead Poisoning Prevention Program was prepared by the following:

Text, Figures and Tables: Deborah Nagin, Jessica Leighton, Parisa Tehranifar,
Diana Puccerella, Andrew Faciano, Howard Alper, Elaine Feliz

Design and Layout: Vani Kurup

For copies of this report and/or more information about the Lead Poisoning Prevention Program of the New York City Department of Health and Mental Hygiene:

Call 311 and ask for the Lead Poisoning Prevention hotline.

This report can be downloaded as a PDF file from www.nyc.gov/health.

Suggested citation for this publication:

New York City Childhood Lead Poisoning Prevention Program, Annual Report 2003. New York: New York City Department of Health and Mental Hygiene, December 2004.

Contents

Executive Summary	5
Progress in Preventing Childhood Lead Poisoning in New York City, 2003	8
Childhood Lead Poisoning in New York City, 2003	12
NYC's Lead Poisoning Prevention Program in 2003	23
Strategies for Continued Progress	31
Appendix	32

Figures

Figure 1	Steady Decline in Number of Lead-Poisoned Children	9
Figure 2	Fewer Children With Environmental Intervention Blood Lead Levels (EIBLL)	10
Figure 3	Fewer Severe Cases of Childhood Lead Poisoning	11
Figure 4	More Than Half of 1-Year-Old and 2-Year-Old Children in New York City Were Tested for Lead Poisoning	13
Figure 5	Percent of Children Tested for Lead Poisoning Varied by New York City Boroughs	14
Figure 6	Percent of Children Tested for Lead Poisoning Was Higher in Some NYC Neighborhoods	15
Figure 7	Brooklyn Children Were Over-Represented in the Environmental Intervention Blood Lead Level (EIBLL) Group	16
Figure 8	Rates of Children With Elevated Blood Lead Levels Were Higher in Some Neighborhoods	17
Figure 9	Environmental Intervention Blood Lead Level (EIBLL) Case Rates Were Higher in Some Neighborhoods	18
Figure 10	Environmental Intervention Blood Lead Level (EIBLL) Case Rates Varied By Neighborhood	20
Figure 11	Children of Color Were Over-Represented in the Environmental Intervention Blood Lead Level (EIBLL) Group	21

Tables

Table A-1	New York City intervention protocols for lead-poisoned children.	32
Table A-2	Demographic and environmental profile of children newly identified with blood lead levels at or above the Environmental Intervention Blood Lead Level, ages 0 months to less than 18 years (n=587) and ages 6 months to less than 6 years (n=473): New York City, 2003.	33
Table A-3	Numbers and rates of (1) children tested for lead poisoning; (2) children with elevated blood lead levels; and (3) children with an Environmental Intervention Blood Lead Level, ages 0 months to less than 18 years, by borough, and United Hospital Fund neighborhood: New York City, 2003.	35
Table A-4	Numbers and rates of (1) children tested for lead poisoning, (2) children with elevated blood lead levels, and (3) children with an Environmental Intervention Blood Lead Level, ages 6 months to less than 6 years, by borough, and United Hospital Fund neighborhood: New York City, 2003.	37
Table A-5	Neighborhood codes and their corresponding names, New York City.	40

Executive Summary

About This Report

This third annual report on Childhood Lead Poisoning in New York City (NYC) describes the progress made in preventing childhood lead poisoning and summarizes the activities and accomplishments of the Lead Poisoning Prevention Program (LPPP) of the NYC Department of Health and Mental Hygiene (DOHMH). Since LPPP provides services to lead-poisoned children less than 18 years of age, data presented in the report, except where specified, refer to children less than 18 years of age. However, the age group at greatest risk for lead poisoning includes children 6 months to less than 6 years of age, especially those children between the ages of 1 and 3 years. In addition, NYC's new childhood lead poisoning prevention law, Local Law 1 of 2004, applies to children less than 7 years. Data for these age groups are provided in some sections of this report.

This report reflects DOHMH's commitment to providing community members, policy makers and health professionals with information on the health status of NYC residents. This report is also submitted in compliance with Local Law 1 of 2004 which mandates annual reporting of NYC's progress in increasing blood lead screening and reducing rates of children with elevated blood lead levels.

Significant Progress

Childhood lead poisoning is a serious but preventable public health problem. Over the past thirty-five years, New York City (NYC) has made significant progress in preventing childhood lead poisoning. Both the number of cases and the severity of cases have decreased dramatically.

- **In 2003**, 4,234 NYC children less than 18 years old were newly identified with elevated blood lead levels, as compared with 21,575 children in 1995, an 80% decline. An elevated blood lead level (BLL) is defined as a BLL greater than or equal to 10 micrograms of lead per deciliter of blood (≥ 10 $\mu\text{g/dL}$).

- **In 2003**, 587 NYC children less than 18 years old were newly identified with blood lead levels greater than or equal to the Environmental Intervention Blood Lead Level (EIBLL), as compared with 1,709 children in 1995, a 66% decline. From July 1, 1999 to August 1, 2004 the EIBLL was defined as a blood lead level greater than or equal to 20 µg/dL, or two blood lead levels of 15–19 µg/dL from tests taken at least three months apart. Prior to that from 1992 through 1999, an EIBLL was defined as a blood lead level greater than or equal to 20 µg/dL.

While this progress is promising in the effort to eliminate childhood lead poisoning, far too many children are still at risk for the deleterious effects of lead poisoning. These include learning and behavioral problems, reduced intelligence and delayed growth and development. These health effects may persist long after a child's blood lead level has declined. Preventing exposure to lead is the only effective way to ensure that children do not suffer long-term consequences of lead poisoning.

Sources of Lead Exposure

Lead dust from deteriorating lead paint in housing remains the primary source of childhood lead poisoning in NYC.

In 2003, LPPP found deteriorating or peeling paint in the homes or supplementary addresses of 65% of EIBLL cases and ordered lead paint abatement in 426 dwellings. The proportion of EIBLL children for whom no lead paint hazards are identified has increased. Between 1995 and 2003, the percent of EIBLL children with no peeling or deteriorating lead paint identified in their homes increased from 25% to 35%. Non-paint sources of lead include lead-glazed pottery and imported food, spices, cosmetics and traditional medicines that are sometimes contaminated with lead. These products are most often used by immigrant

families. Immigrant children and pregnant women may also have been exposed to lead in their country of origin. Other potential lead sources include lead-contaminated soil, as well as hobbies and jobs of family members. Controlling these exposures requires different strategies than those employed for lead paint.

Childhood Lead Poisoning in NYC

Early detection of lead poisoning through blood lead testing is essential to protect children from additional lead exposure and to identify high-risk communities that should be targeted for intensive lead poisoning prevention activities. Blood lead testing is generally the only way to identify lead-poisoned children because most children with elevated BLLs have no clinical symptoms. New York State requires that children be tested for lead poisoning at both 1 and 2 years of age. Children at high risk of lead poisoning should be screened up to 6 years of age.

- **In 2003**, 66% of 1-year-old and 56% of 2-year-old children were tested.

Although lead poisoning can affect children of all ages, races and income groups, children less than 3 years of age who live in older, deteriorated housing have an increased risk of exposure to lead. Children of color are disproportionately affected by lead poisoning.

In 2003, of the 587 children with EIBLLs:

- 86% lived in homes built before 1950.
- About 50% lived in just 9 of 42 NYC neighborhoods. The highest concentration of cases was found in Brooklyn.
- 56% were less than 3 years old.
- 27% were between 3 and 6 years of age.
- 88% were African-American, Hispanic or Asian.
- 17% were foreign-born.

Lead Poisoning Prevention Program

The LPPP's mission is to prevent and control childhood lead poisoning. To achieve this goal, LPPP has developed comprehensive, proactive strategies targeting communities and populations at highest risk of lead poisoning.

In 2003, LPPP began laying the groundwork to further expand its existing primary prevention efforts while continuing to improve upon the services provided to lead-poisoned children and their families. Highlights of 2003 initiatives include:

- Continuing collaboration with the NYC Department of Housing Preservation and Development (HPD) targeting buildings in which children have previously been poisoned. This primary prevention initiative includes landlord and tenant education and enforcement of regulations that require proactive lead paint repairs in pre-1960 apartments occupied by young children.
- Expansion of partnership with Medicaid Managed Care Organizations (MMCO) to promote screening among Medicaid-enrolled children. Through a data matching process, LPPP receives data on children enrolled in an MMCO, matches these children against the LPPP database of lead tests to identify those who have not had a blood lead test, and communicates this information to the MMCO for systematic follow-up by the child's provider.
- Expediting lead abatement procedures for hospitalized lead-poisoned children undergoing medical chelation.
- Improving educational materials aimed at informing landlords about lead hazard repair procedures and their legal responsibilities.
- Launching a radio campaign in Spanish and English, to encourage parents to report peeling paint to HPD, and to have their children tested for lead poisoning.

Strategies for Continued Progress

New York City has made great progress in reducing childhood lead poisoning. However, more needs to be done. Continued success will require creative strategies and new partnerships designed to:

- Utilize surveillance data to identify high-risk populations and target prevention programs to those groups.
- Eliminate or reduce lead paint hazards in housing.
- Improve blood lead screening for children.
- Identify and remove exposure to non-paint lead sources.
- Increase culturally and linguistically appropriate outreach to immigrant populations.
- Expand collaborations with community-based groups, housing organizations, medical providers and agencies concerned with children's health.
- Promote lead poisoning prevention in pregnant women.

Progress in Preventing Childhood Lead Poisoning

in New York City, 2003

Lead poisoning is a preventable public health problem. Exposure to lead can result in long-lasting neurological damage that may be associated with learning and behavioral problems, as well as lowered intelligence. Research suggests that even blood lead levels less than 10 µg/dL may adversely affect normal neurological development.

While New York City (NYC) has made great progress in reducing childhood lead poisoning, the profile of NYC lead-poisoned children underscores the need for continued prevention efforts. These efforts need to be especially targeted to communities and populations at greatest risk.

The Lead Poisoning Prevention Program (LPPP) of the New York City Department of Health and Mental Hygiene (DOHMH) was established in 1970. The LPPP's mission is to prevent childhood lead poisoning, promote blood lead testing, and provide intervention services for lead-poisoned children and their families.

Since 1970, NYC has made significant progress. Both the number of lead poisoning cases and the severity of cases in children less than 18 years of age have decreased. This success is largely attributable to government regulations introduced over the past four decades that:

- Prohibit the use of lead in paint, gasoline, and other consumer products.
- Require remediation of lead paint hazards in older housing.
- Promote early identification of children with elevated blood lead levels (BLLs).

Important Definitions in This Report

Elevated blood lead level is defined as a blood lead level (BLL) greater than or equal to (\geq) 10 micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dL}$) (Table A-1). This definition is consistent with the U.S. Centers for Disease Control and Prevention (CDC) recommendations.

Environmental Intervention Blood Lead Level (EIBLL) for 2003 was defined as a venous BLL greater than or equal to (\geq) 20 $\mu\text{g}/\text{dL}$, or two BLLs of 15–19 $\mu\text{g}/\text{dL}$ from tests taken at least 3 months apart. Children with EIBLLs receive environmental intervention and case coordination from LPPP (Table A-1). This intervention level is also consistent with CDC recommendations. As of August 2, 2004, the definition of EIBLL is a BLL of 15 $\mu\text{g}/\text{dL}$ or greater.

New York City was at the forefront of prevention efforts when, in 1960, it banned the use of lead paint in homes. This ban occurred 18 years before the 1978 national ban. NYC also prohibits the sale of toys, children's furniture, and other items used by children, which contain lead paint. Historically, the City has also had strong lead poisoning prevention regulations enforced through its housing and health codes.

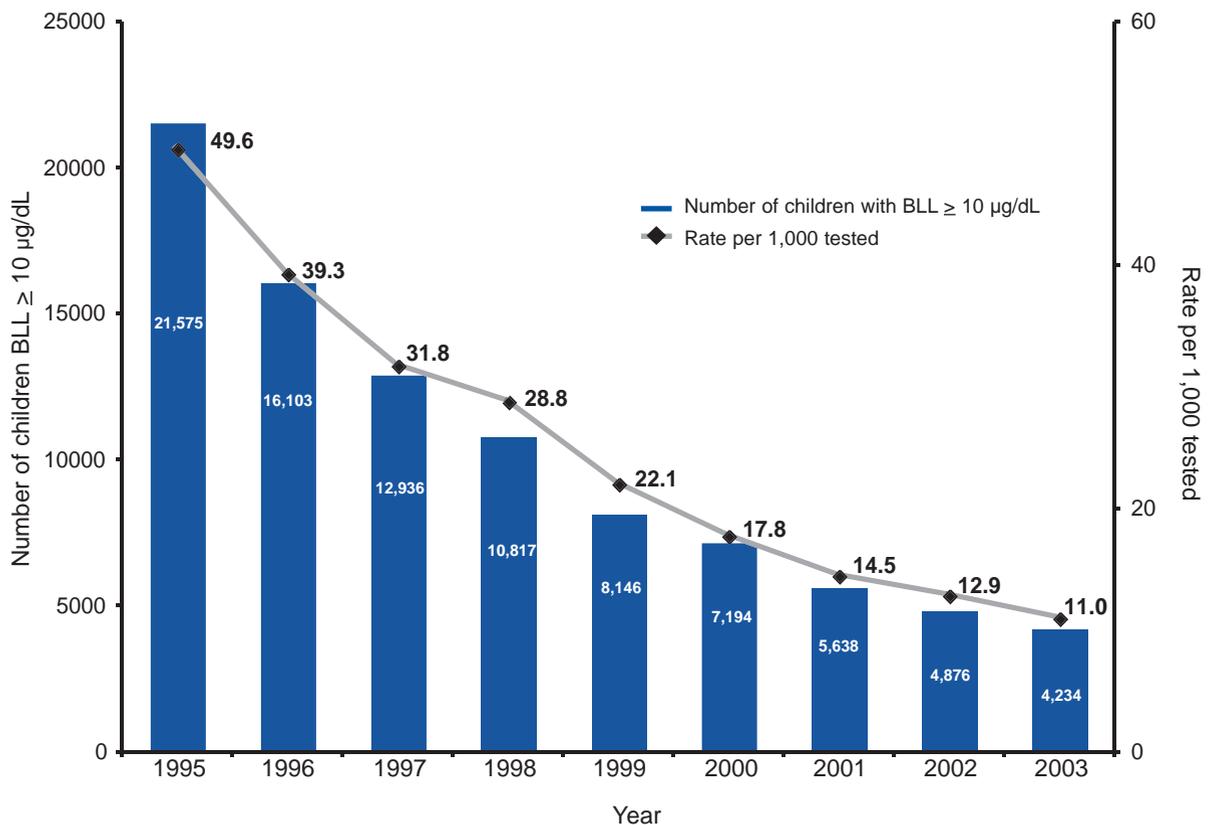
Fewer Lead-Poisoned Children

Since 1995, the first full year of mandated reporting of all blood lead tests by New York State,

the number of NYC children with lead poisoning and the severity of cases have declined steadily. This trend has continued through 2003.

- The number of children newly identified with elevated blood lead levels (greater than or equal to 10 $\mu\text{g}/\text{dL}$) dropped:
 - 80% in children less than 18 years old, from 21,575 children in 1995 to 4,234 children in 2003 (Figure 1).
 - 82% among children 6 months to less than 6 years, from 19,232 in 1995 to 3,413 children in 2003.

Figure 1
Steady Decline in Number of Lead-Poisoned Children*



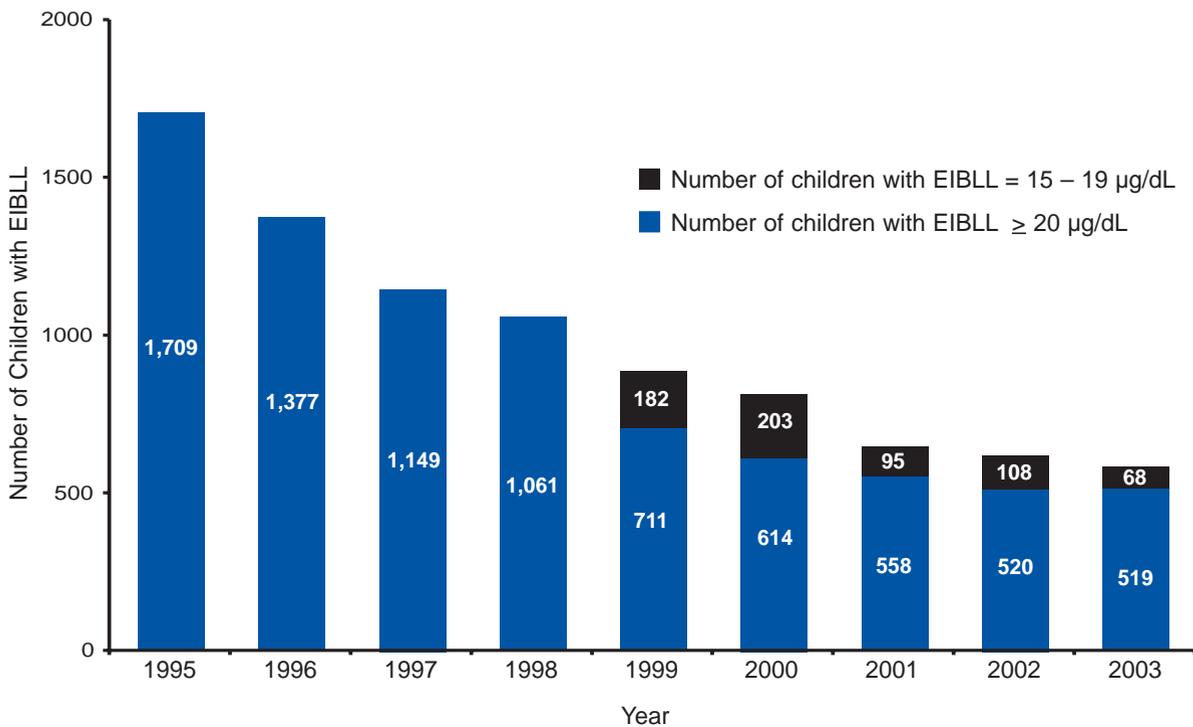
* Number and rate (per 1,000 tested) of children, ages 0 to less than 18 years, newly identified with blood lead levels $\geq 10 \mu\text{g}/\text{dL}$, by year: New York City, 1995–2003.

- 81% in 6-year-old children, from 822 in 1995 to 160 children in 2003.
- The percent of children tested for lead poisoning who were newly identified with elevated blood lead levels (greater than or equal to 10 µg/dL) declined from:
 - 5% in 1995 to 1% in 2003 among children less than 18 years and among children 6 months to less than 6 years old.
 - 3% in 1995 to less than 1% in 2003 among 6 year-old children.

Fewer Environmental Intervention Cases

- The number of children newly identified each year with Environmental Intervention Blood Lead Levels (EIBLL) declined by:
 - 66% in children less than 18 years old, from 1,709 children in 1995 to 587 children in 2003 (Figure 2).
 - 70% in children 6 months to less than 6 years old, from 1,578 in 1995 to 473 in 2003.
 - 66% in 6-year-old children, from 44 in 1995 to 15 in 2003.

Figure 2
Fewer Children With Environmental Intervention Blood Lead Levels (EIBLL)*



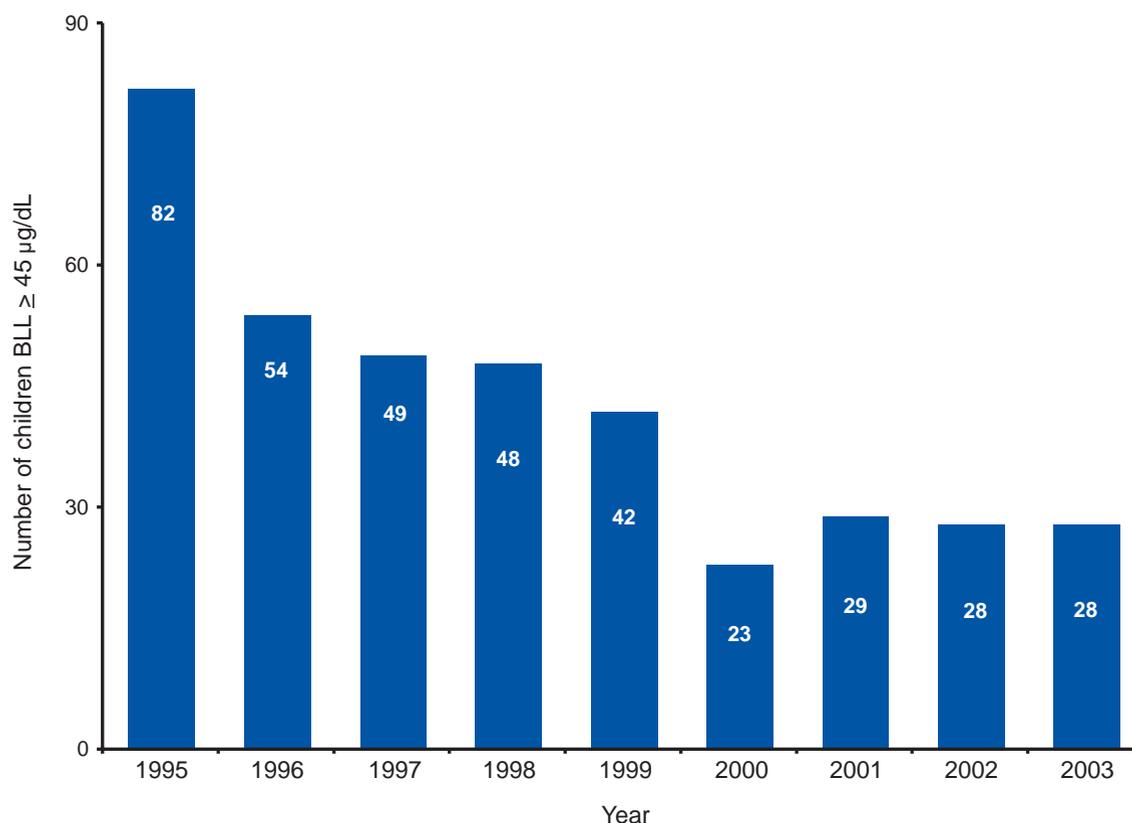
* Number of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by year: New York City, 1995–2003. Between July 1, 1999 and August 1, 2004, the Environmental Intervention Blood Lead Level was defined as a venous BLL ≥ 20 µg/dL or two blood lead levels 15–19 µg/dL that were drawn at least 3 months apart, where the second test was a venous sample.

Fewer Severe Cases

Today, the vast majority of children with elevated blood lead levels have levels that are below the EIBLL. Most have no clinical symptoms of lead poisoning and very few require hospitalization or chelation. Chelation, a medical treatment for removing lead from blood, is currently recommended by the U.S. Centers for Disease Control and Prevention (CDC) at BLLs of 45 $\mu\text{g}/\text{dL}$ or greater.

- In 2003, 28 children less than 18 years of age had BLLs of 45 $\mu\text{g}/\text{dL}$ or greater, as compared to 82 children in 1995, a 66% decrease (Figure 3). Of the 28 children, 24 (86%) were 6 months to less than 6 years old.
- In 1970, childhood lead poisoning was defined as a BLL $\geq 60 \mu\text{g}/\text{dL}$. In 2003, only 8 children less than 18 years old had BLLs $\geq 60 \mu\text{g}/\text{dL}$, as compared to 2,649 children in 1970. Of the 8 children, 88% (7) were 6 months to less than 6 years old.

Figure 3
Fewer Severe Cases of Childhood Lead Poisoning*



* Number of children, ages 0 to less than 18 years, newly identified with blood lead levels $\geq 45 \mu\text{g}/\text{dL}$, by year: New York City, 1995–2003.

Childhood Lead Poisoning

in New York City, 2003

Lead poisoning can affect children of all ages, races, and income groups. However, children less than 3 years of age, particularly those who are poor and live in older, deteriorated housing are at greatest risk of lead poisoning. Children of color are disproportionately affected by lead poisoning.

Screening for Lead Poisoning

In New York State (NYS) screening for lead poisoning is required for all 1-year-old and 2-year-old children and up to age 6 for high-risk children. Blood lead testing is important because most children with elevated blood lead levels (BLLs) have no clinical symptoms. Early detection of lead poisoning is essential to protect individual children from additional exposure, identify high-risk communities and populations, and target lead poisoning prevention activities. The data presented below will serve as a baseline to monitor progress toward increasing blood lead screening in the future.

In 2003,

- 66% of 1-year-olds and 56% of 2-year-olds were tested (Figure 4).
- For children born in 2000, an estimated 84% were tested for lead at least once before their third birthday; yet only 30% had been tested at both ages 1 and 2, as required by NYS law.

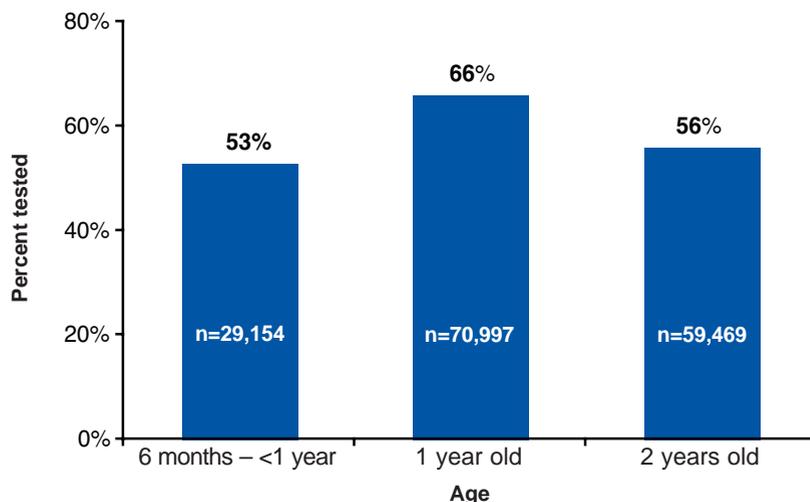
Lead Paint Hazards

The use of lead paint in residential buildings was banned in New York City in 1960, but homes built before the ban still contain lead in older layers of paint. The presence of lead-based paint can become a hazard when it is peeling or damaged.

- Aging paint can peel or flake, depositing lead dust on floors, windowsills and other surfaces in the home.
- Paint can be damaged by water leaks or by friction on windows or doors.
- Unsafe repair or renovation work on painted surfaces can create lead dust in work areas.

Testing rates showed significant geographic variation. Many of the communities with the highest numbers of lead-poisoned children were also the communities with the highest rates of testing.

Figure 4
More Than Half of 1-Year-Old and 2-Year-Old Children in New York City Were Tested for Lead Poisoning*



* Number and percent of children, ages 6 months to less than 3 years, tested for lead poisoning, by age: New York City, 2003. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

In 2003, screening rates for NYC 1- and 2-year-old children:

- Varied across boroughs, ranging from 40% in Staten Island to 72% in Manhattan (Figure 5).
- Varied among neighborhoods, ranging from 35% in Port Richmond, Staten Island to 68% in both Hunts Point–Mott Haven, Bronx and East Harlem, Manhattan (Figure 6).

Old Housing in Poor Neighborhoods

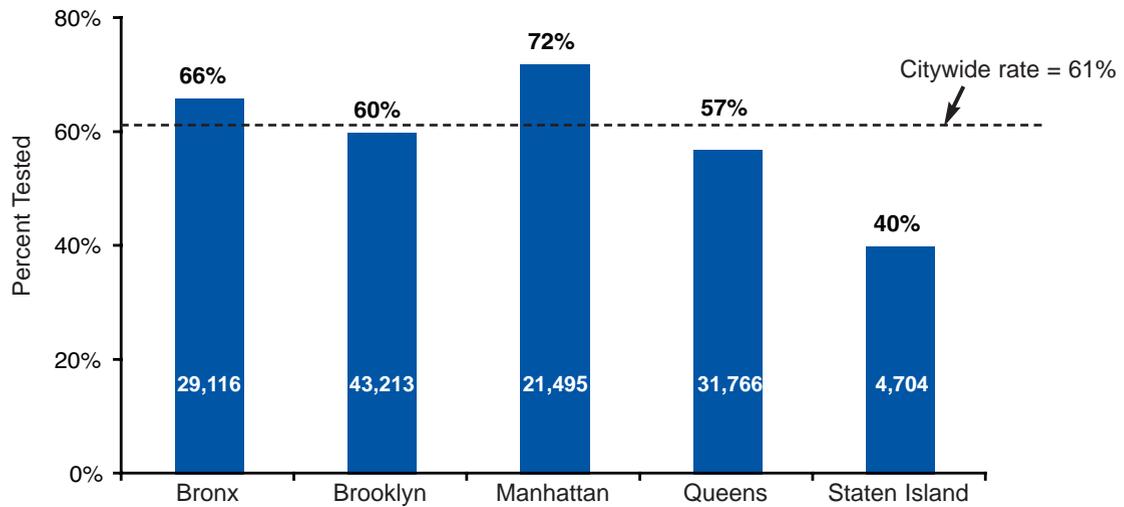
Lead paint remains the primary source of childhood lead poisoning in NYC. In 2003, LPPP inspectors found peeling or deteriorated lead paint in the homes or supplementary addresses (such as the home of a babysitter) of 65% of children less than 18 and 68% of children 6 months to 6 years old identified with EIBLLs (Table A-2).

Nationwide, lead poisoning is associated with living in homes built before 1950. Before 1950, lead paint was widely used and generally contained more lead than in later decades. In NYC, 55% of the housing stock was built before 1950.

In 2003,

- 83% of children, less than 18 years old, newly identified with EIBLLs lived in dwellings built before 1950 (Table A-2).
- 86% of children, 6 months to less than 6 years old, newly identified with EIBLLs lived in dwellings built before 1950 (Table A-2).
- 91% of children, 1 to less than 3 years old, newly identified with EIBLLs lived in dwellings built before 1950.

Figure 5
Percent of Children Tested for Lead Poisoning Varied by New York City Boroughs*



* Percent of children, ages 1 year to less than 3 years, tested for lead poisoning, by borough: NYC, 2003. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

Borough

Brooklyn children are disproportionately affected by lead poisoning. About 34% of NYC children, less than 18 years, reside in Brooklyn, but the proportion of lead-poisoned children from that borough is considerably higher (Figure 7).

In 2003,

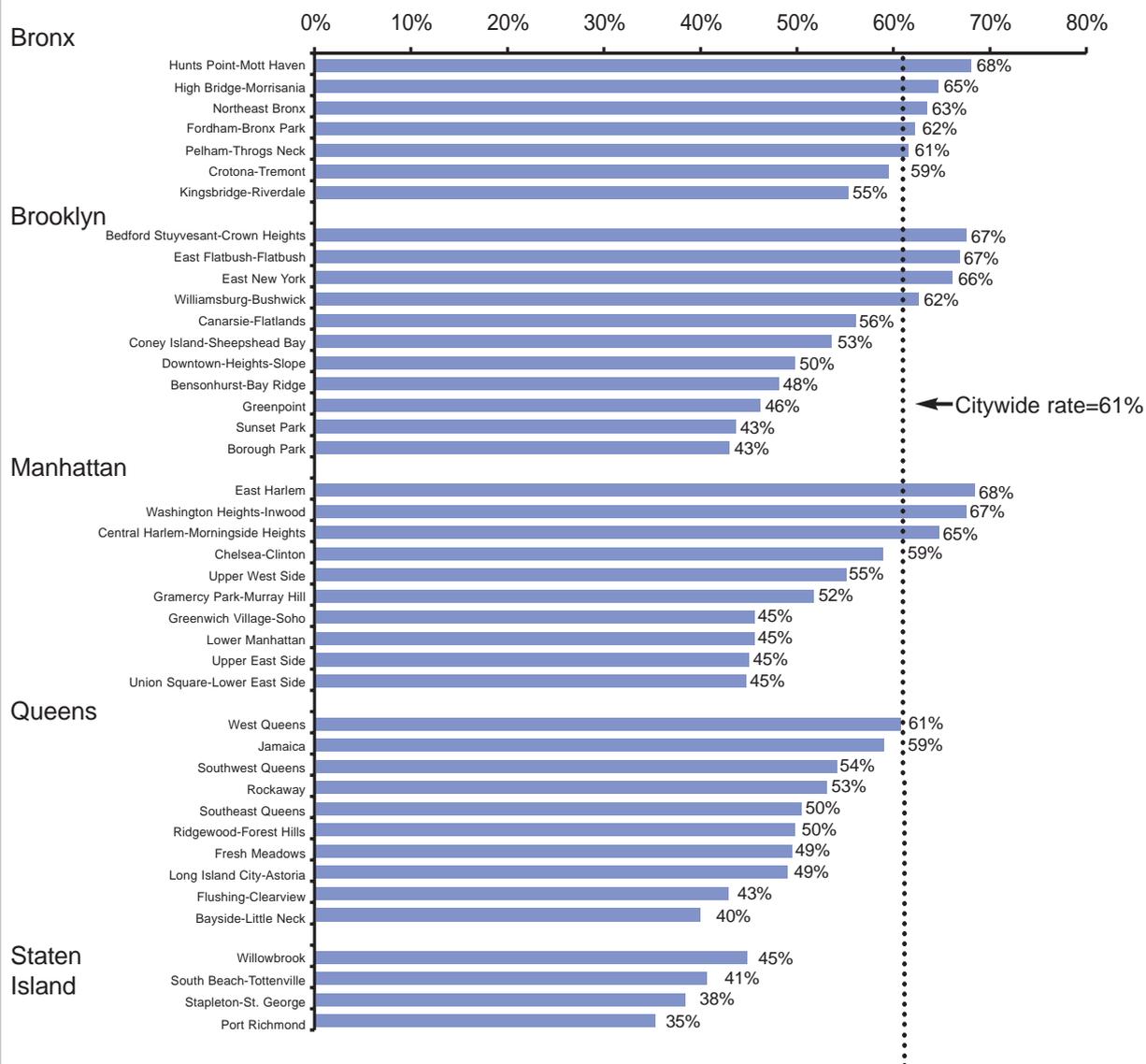
- 41% of children less than 18 years old newly identified with BLLs ≥ 10 $\mu\text{g}/\text{dL}$ lived in Brooklyn (Figure 8 and Table A-3)
- 43% of children, less than 18 years old, newly identified with EIBLLs resided in Brooklyn (Figure 9 and Table A-3).

In Brooklyn, Manhattan, and the Bronx, the number of children less than 18 years old with

EIBLLs continued to decline. However, there was an increase from 2002 in the number of children with EIBLLs in the boroughs of Queens and Staten Island. The increase in Queens was relatively small with 135 children identified in 2002 and 142 children identified in 2003.

In Staten Island, however, while the number of lead-poisoned children remained lower than the numbers in other boroughs, the numbers of children with EIBLLs doubled from 17 children in 2002 to 33 children in 2003. The profile of children with EIBLLs from Staten Island was similar to that of children with EIBLLs in other parts of the City. Typically, these are poor children of color living in old deteriorated housing. Lead poisoning on Staten Island will be monitored

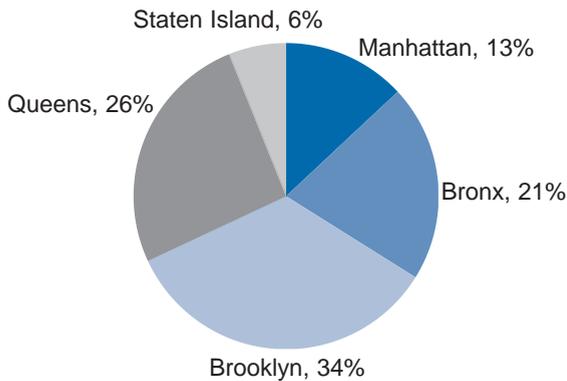
Figure 6
 Percent of Children Tested for Lead Poisoning was Higher in Some NYC Neighborhoods*



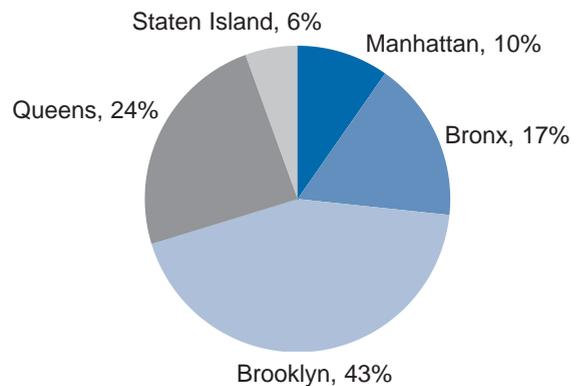
* Percent of children, ages 1 year to less than 3 years, tested for lead poisoning, by United Hospital Fund Neighborhood: NYC, 2003. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

Figure 7
Brooklyn Children Were Over-Represented in the Environmental Intervention Blood Lead Level (EIBLL) Group*

Percent of children in NYC population, 2000 (total = 1,940,269)



Percent of new EIBLL cases, 2003 (total = 587)



* Distribution of children, ages 0 to less than 18 years, in the population, and distribution of children newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by borough: New York City, 2003. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

closely over the next year to determine if the increase in the number of cases continues, and to investigate possible factors associated with this increase.

Lead Poisoning Rates in New York City Neighborhoods

Information on lead poisoning is evaluated for each of 42 neighborhoods in NYC.¹ The disproportionate burden of lead poisoning in certain neighborhoods is evident when rates of children with elevated blood lead levels and EIBLLs in each community are compared to the citywide average.

In 2003, for children newly identified with BLLs ≥ 10 $\mu\text{g}/\text{dL}$:

- The citywide rate was 11.0 for every 1,000 children tested.

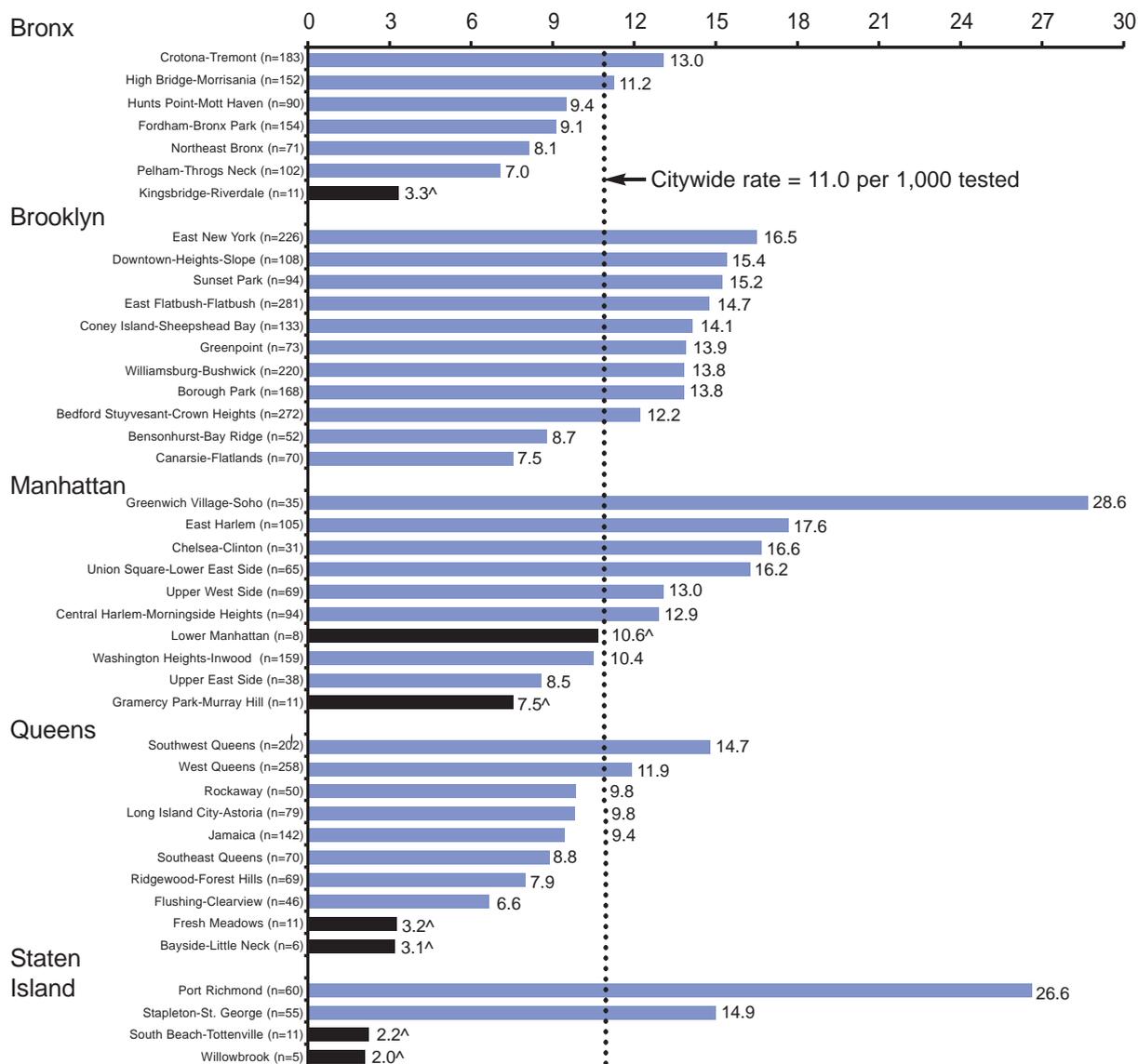
- The rate was higher than the citywide average in 21 of 42 neighborhoods; 9 of these neighborhoods were in Brooklyn and 6 were in Manhattan (Figure 8 and Table A-3).

In 2003, for children newly identified with EIBLLs:

- The citywide rate was 1.5 for every 1,000 children tested.
- The rate was higher than the citywide average in 18 of 42 neighborhoods; 10 of these neighborhoods were in Brooklyn (Figure 9 and Table A-3).

The rates of children with EIBLLs as well as elevated BLLs in two Staten Island neighborhoods reflect the increase in the number of cases from Staten Island in 2003 (Figure 9). As mentioned earlier, LPPP will continue to investigate possible factors that could be related to lead poisoning in these areas.

Figure 8
Rates of Children With Elevated Blood Lead Levels Were Higher in Some Neighborhoods*

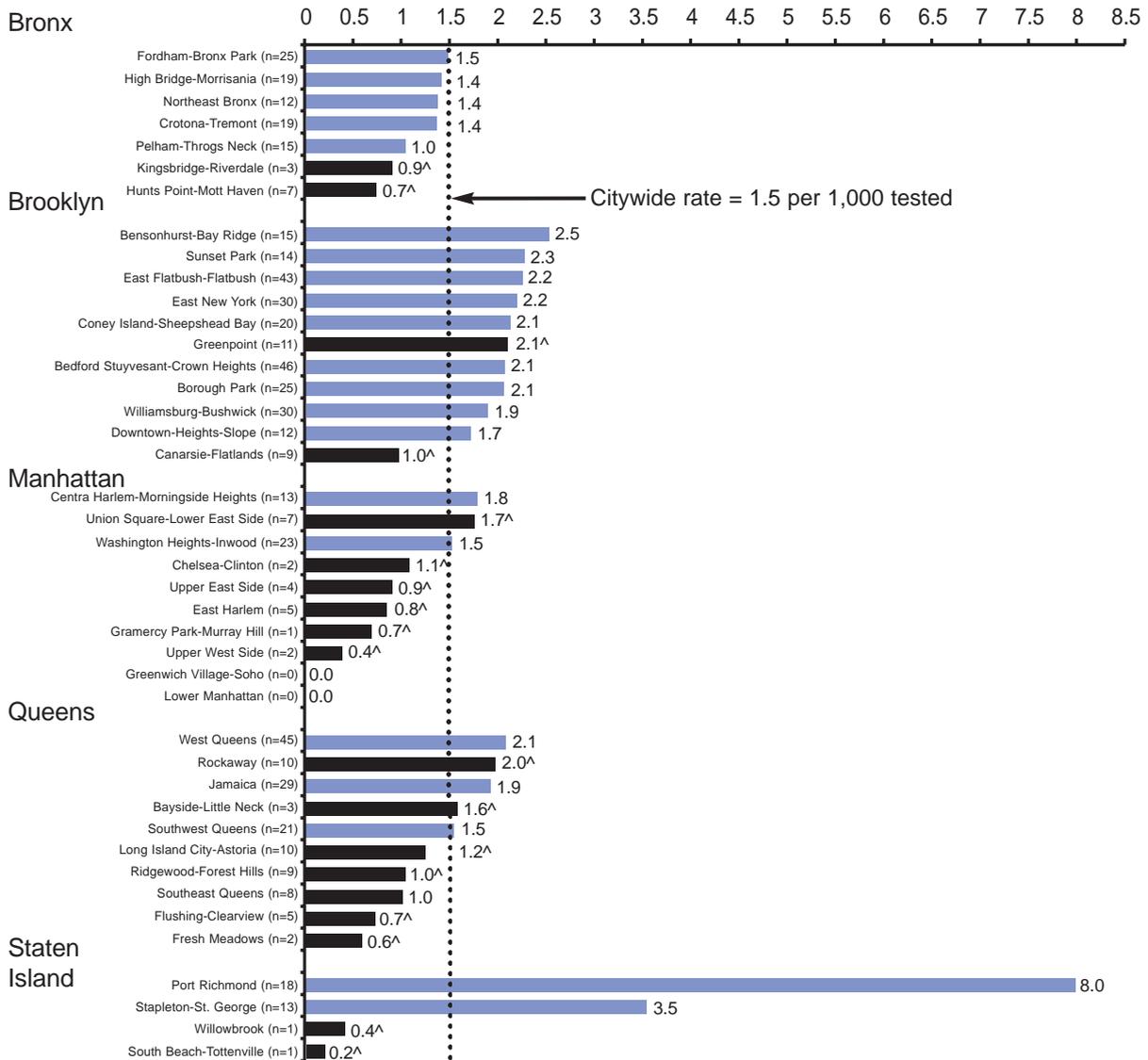


* Number and rate (per 1,000 children tested) of children, ages 0 to less than 18 years, newly identified with an Elevated Blood Lead Level ($\geq 10 \mu\text{g/dL}$), by United Hospital Fund Neighborhood (sorted highest to lowest within each borough): NYC, 2003.

[^] Elevated Blood Lead Level rates in neighborhoods represented by black bars were less precise (relative standard error $\geq 30\%$) due to the small numbers of children with elevated BLL. Caution should be used in interpreting these case rates.

Note: Number of cases with elevated blood lead levels in each neighborhood is reported in parentheses to the right of neighborhood name.

Figure 9
Environmental Intervention Blood Lead Level (EIBLL) Case Rates Were Higher in Some Neighborhoods*



* Number and rate (per 1,000 children tested) of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by United Hospital Fund Neighborhood (sorted highest to lowest within each borough): NYC, 2003.

[^] Case rates in neighborhoods represented by black bars were less precise (relative standard error = 30%) due to the small numbers of cases. Caution should be used in interpreting these case rates.

Note: Number of cases with EIBLLs in each neighborhood is reported in parentheses to the right of neighborhood name.

Neighborhood and Poverty

The condition of housing—not just its age—puts children at risk for lead poisoning. Lead poisoning is not common in middle- and upper-income communities, even when a large portion of the housing was built before 1950. Rather, lead poisoning is generally concentrated in low-income communities, where older housing is often in deteriorated condition. Nationwide, children between the ages of 1 and 5 years living in older housing were four times more likely to have elevated BLLs when their families had low incomes as compared to children whose families had higher incomes.

Lead poisoning in NYC continues to be concentrated in neighborhoods that have large, low-income populations living in older, deteriorated homes.

In NYC, 30% of all children, less than 18 years old, lived below the poverty level.

In 2003,

- About half of the children, less than 18 years old, who were newly identified with BLLs ≥ 10 $\mu\text{g}/\text{dL}$ lived in just 10 of 42 NYC neighborhoods² (Table A-3). In these neighborhoods, 35% of children lived in poverty.
- About half of the children, less than 18 years old, who were newly identified with EIBLLs lived in just 9 of 42 NYC neighborhoods³ (Table A-3). In these neighborhoods, 35% of children lived in poverty.

The map in Figure 10 highlights in dark blue the neighborhoods with the highest EIBLL case rates. Most of these are low-income communities with substantial populations of color. By contrast, the neighborhoods with the lowest EIBLL case rates—highlighted in white and light gray—have generally middle- to upper-income and predominantly White population.

Age

Young children, especially those between the ages of 6 months and 3 years, are at greatest risk for lead poisoning. They are more likely to ingest lead paint or lead dust because they crawl around on floors and put their hands and toys in their mouths. Research suggests that children less than 2 years of age may be particularly vulnerable to the neurotoxic effects of lead because of their rapidly developing neurological systems. Moreover, these youngest children benefit most from interventions that reduce lead hazards.

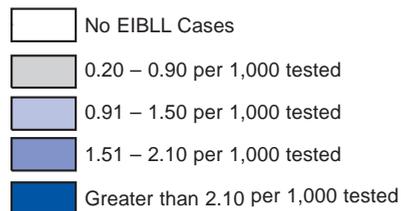
In 2003,

- 56% (2,369) of the 4,234 children who were newly identified with BLLs ≥ 10 $\mu\text{g}/\text{dL}$ were less than 3 years old.
- Among the 587 children with EIBLLs, 56% (327 children) were less than 3 years old, and another 27% (161 children) were between 3 and 5 years of age (Table A-2).

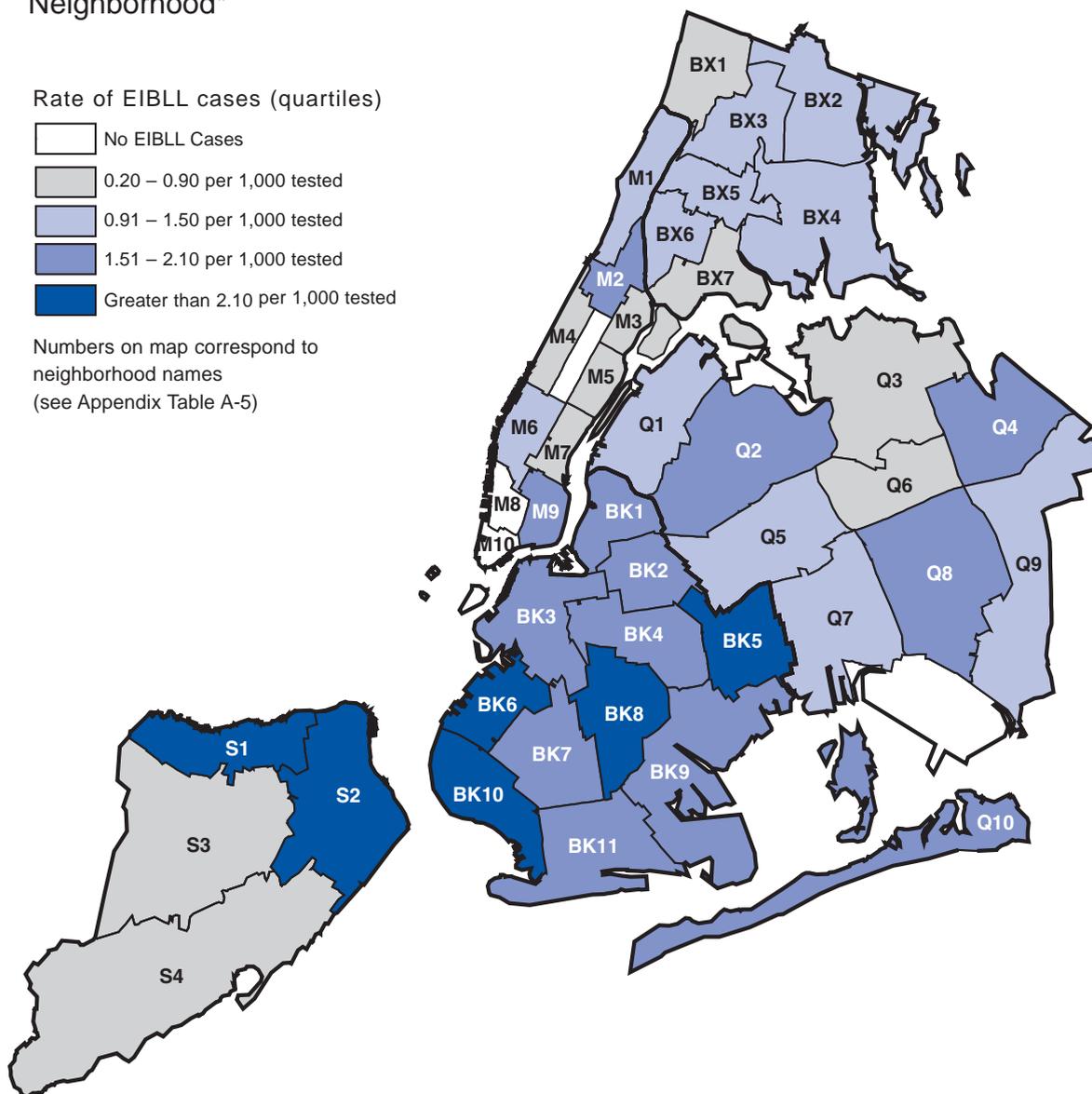
NYC Local Law 1 of 2004, which became effective in August 2004, targets homes of children less than 7 years. The previous regulation, Local Law 38 of 1999, targeted homes of children less than 6 years, consistent with State and national recommendations and guidelines. In 2003, there were 15 children newly identified with EIBLLs who were 6 years old, comprising only 3% of lead-poisoned children. As children get older, it becomes less likely that the primary source of lead poisoning is current exposure to lead-based paint from deteriorated housing. Public health approaches must continue to focus efforts on the highest risk groups. For childhood lead poisoning, this continues to be children less than 6 years old, especially those children 6 months to less than 3 years of age.

Figure 10
 Environmental Intervention Blood Lead Level (EIBLL) Case Rates Varied By
 Neighborhood*

Rate of EIBLL cases (quartiles)



Numbers on map correspond to
 neighborhood names
 (see Appendix Table A-5)



* Rates of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level (EIBLL), defined as a venous blood lead level $\geq 20 \mu\text{g/dL}$, or 2 blood lead levels of $15\text{--}19 \mu\text{g/dL}$ drawn at least 3 months apart, where the second test was a venous sample.

Gender

In the 2002 Annual Report, LPPP noted a higher proportion of male children with EIBLLs (59%) than female children (41%). As described in the last year's report, from 1995 through 2001, EIBLL cases were divided fairly evenly between boys and girls, with slightly more than half of the cases occurring in males. In 2003, the proportion of male cases was 55% (Table A-2).

Race/Ethnicity

In NYC, lead poisoning disproportionately affects children of color (Figure 11). This is determined by comparing the race/ethnicity of children with EIBLLs to the racial/ethnic composition of NYC's population. African-

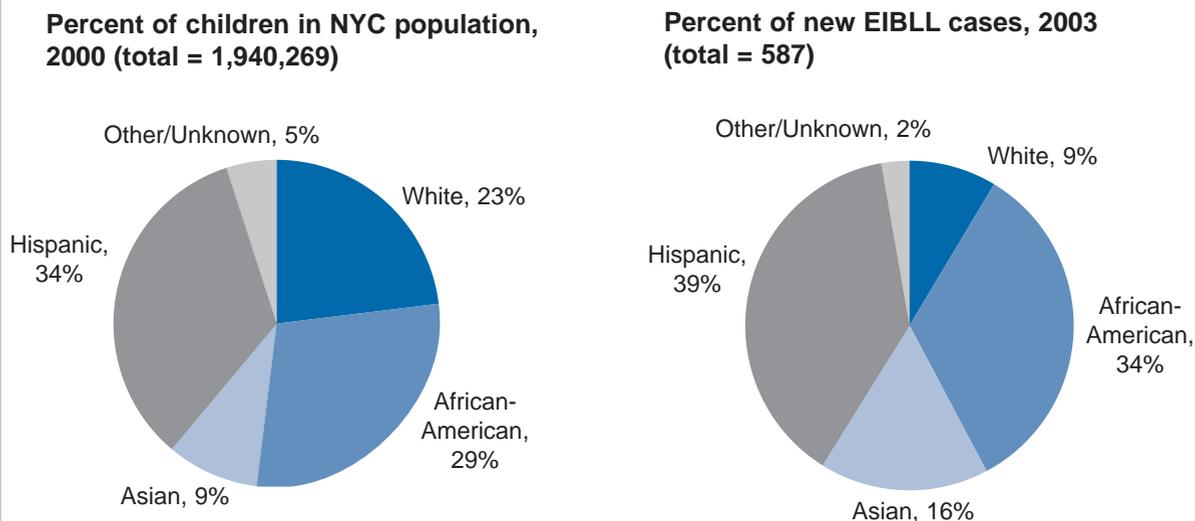
American, Hispanic, and Asian children are more likely than White children to have BLLs in the EIBLL category. At least in part, this trend reflects the importance of poverty as a risk for lead poisoning in these groups.

In 2003,

- African-American, non-Hispanic children represented 34% of EIBLL cases, but only 29% of NYC children.
- Hispanic children accounted for 39% of EIBLL cases, but only 34% of NYC children.
- Asian, non-Hispanic children made up 16% of EIBLL cases, but only 9% of NYC children as a whole.
- White, non-Hispanic children represented only 9% of EIBLL cases although 23% of NYC children are White, non-Hispanic.

Figure 11

Children of Color Were Over-Represented in the Environmental Intervention Blood Lead Level Group*



* Distribution of children, ages 0 to less than 18 years, in the population, and distribution of children newly identified with an Environmental Intervention Blood Lead Level (EIBLL), by race/ethnicity: New York City, 2003. Sources: NYC DOHMH LPPP and US Census 2000 (Summary File 1).

Country of Birth and Other Sources of Lead Exposure

The LPPP data have suggested that children born in a foreign country may be over-represented among lead-poisoned children. In 2002, the percent of children with EIBLLs who were foreign-born remained higher than the percent of foreign-born children in NYC. However, the percent of foreign-born children among children with EIBLLs declined from 22% in 2002 to 17% in 2003.

In 2003,

- 17% of the 587 newly identified children less than 18 years old with EIBLLs were born outside of the U.S., while 14% of all NYC children were born abroad.
- The most frequently reported countries of birth among foreign-born children, less than 18 years old, with EIBLLs in 2003 were Mexico, Haiti, Pakistan, Dominican Republic, and Bangladesh, in descending order.

In 2003, as in previous years, deteriorated lead paint was found less often in the homes of foreign-born children with EIBLLs than in the homes of U.S.-born children with EIBLLs.

In 2003,

- 72% of children less than 18 years old with EIBLLs born in the U.S. had peeling or

deteriorated lead paint in their homes, while only 47% of foreign-born EIBLL children had peeling or deteriorated lead paint.

Although lead paint and lead dust in housing remain the primary sources of lead poisoning in children, a growing proportion of EIBLL children may be associated with non-lead paint exposures. Between 1995 and 2003, the percent of children, less than 18 years old, with EIBLLs that were not found to have deteriorated lead paint in their home or supplementary address increased from 25% to 35%.

Other potential exposure sources include:

- Lead-glazed pottery, as well as food, spices, traditional medicines and cosmetics contaminated with lead. These items are often imported from other countries.
- Living in or traveling to foreign countries where lead contamination persists from leaded gasoline and from industrial emissions contaminating food and other products.
- Lead brought into homes by family members with lead related jobs or hobbies.
- Soil and street dust contaminated with lead from paint on building exteriors, bridges, and elevated subway tracks, or from previous industrial and motor vehicle emissions.
- Prenatal exposures.

NYC's Lead Poisoning Prevention Program

in 2003

The Lead Poisoning Prevention Program (LPPP) has developed a proactive, comprehensive approach to childhood lead poisoning prevention and control. The core program areas include:

- Lead paint hazard reduction in communities.
- Public education and outreach to promote prevention and early detection.
- Care coordination for lead-poisoned children and pregnant women and their newborns.
- Environmental intervention and enforcement for children with EIBLLs.
- Surveillance and research.

The most effective way to reduce childhood lead poisoning is to target populations at greatest risk of exposure to lead. In 2003, LPPP intensified its targeted efforts to high-risk populations. The LPPP uses a range of data sources to target its intervention efforts including blood lead surveillance data, U.S. census data and housing violation data. Examples of LPPP's targeted activities include data-matching projects with Medicaid Managed Care Organizations, collaborations with HPD to identify and address paint hazards in buildings where lead-poisoned children have resided, and production of media advertisements and health alerts. These activities are described in more detail below.

Reducing Lead Paint Hazard

Reducing lead paint hazards in NYC communities is an important part of LPPP's prevention strategy. Using its authority under the NYC Health Code, LPPP:

Orders Landlords to Correct Lead Paint Violations

The LPPP issues violations to landlords, ordering them to correct lead paint violations in the homes of children with EIBLLs.

In 2003,

- The LPPP developed a new instructional

package for landlords of buildings where DOHMH has identified lead paint violations. The goal of the package is to improve the quality and safety of abatement ordered by DOHMH while also encouraging building owners to complete abatement more quickly.

- Lead abatement work was completed in 518 homes by order of the LPPP.
- Protocols to expedite abatement work in homes of hospitalized lead-poisoned children were implemented, in collaboration with HPD.

Conducts Lead Hazard Investigation in 1- and 2-Family Homes

LPPP responds to complaints about peeling or deteriorated paint from tenants in 1- and 2-family homes and orders landlords to repair lead paint hazards that are identified. (HPD performs a similar function for tenants in multiple dwellings with 3 or more units, as described below.)

In 2003,

- LPPP conducted 77 inspections at 48 addresses in 1- and 2-family homes.

Enforces Safe Work Practices

The LPPP enforces health code regulations that require the use of safe work practices during lead paint abatement work. The LPPP sanitarians also investigate complaints of lead paint disturbances in and around homes of young children and issue violations when unsafe work practices are identified.

In 2003,

- LPPP conducted 1,146 safety inspections for work disturbing lead paint.

Collaboration With HPD

The DOHMH has built a strong partnership with HPD in an effort to protect children from lead paint hazards. In 2003, LPPP and HPD continued the following primary prevention collaborations:

Educating At-Risk Families

Whenever HPD inspectors find peeling or deteriorating paint in an apartment of a young

child built before 1960, HPD orders the building owner to correct the violations. The LPPP, which is notified by HPD of apartments with violations, sends the tenants information about lead poisoning and encourages them to have their children tested for lead poisoning.

In 2003,

- LPPP sent 3,288 letters to families of young children in apartments with lead paint violations.

A New Lead Poisoning Prevention Law

On July 1, 2003, NYC's previous lead poisoning prevention law, known as Local Law 38, was nullified by the NYS Court of Appeals. It was replaced by the Childhood Lead Poisoning Prevention Act, known as Local Law 1, which became effective on August 2, 2004.

Local Law 1 expands upon the duties of building owners, DOHMH and HPD with regard to control of lead paint hazards. This law, for which HPD had the primary regulatory authority, requires owners of multiple dwellings (buildings with 3 or more dwelling units) to annually identify and fix lead paint hazards in every apartment occupied by a child less than 7 years of age. The law applies to buildings that were built before 1960, and to buildings constructed between 1960 and 1978 if there is reason to believe the building contains lead paint.

Targeting Buildings with Lead-poisoned Children

The LPPP and HPD continued their joint effort in preventing lead poisoning in multiple dwelling buildings (with 3 or more dwelling units) where two or more children had previously been poisoned. Using surveillance and case management data, LPPP identifies and refers these buildings to HPD for building-wide assessment of adherence to Local Law 38 requirements.

In 2003, in response to DOHMH referral, HPD:

- Provided training for landlords about the hazards of lead, the importance of preventing lead exposure and their legal responsibilities.

Financial Assistance for Lead Paint Hazard Reduction

In 2003, LPPP and Housing Preservation Development (HPD) received a new award from

the US Department of Housing and Urban Development (HUD) to continue their 8-year collaboration on a lead hazard reduction project for several more years. Since 1995, this project has been providing financial assistance to building owners for lead paint hazard reduction.

The LPPP provides HPD with surveillance data to use in identifying high-risk buildings for recruitment into the program. The LPPP also provides families living in buildings receiving renovation with education on lead poisoning prevention and screening through home visits. With parental consent, LPPP monitors the children's BLLs through collection of blood samples during the enrollment period, at no cost to families.

- From 1995 through 2003, more than 1,100 apartments have received lead paint repair.

Educating Key Audiences

Targeting community outreach and education to high-risk groups and neighborhoods is key to LPPP's prevention strategy. Core constituent groups include: families and caregivers of young children, health care providers, community-based organizations, and landlords and housing repair contractors. The LPPP educators provide information on lead poisoning prevention, screening, lead paint hazards, safe work practices, non-paint lead hazards, and legal requirements.

In 2003, LPPP educational and outreach staff:

- Responded to 2,837 calls to the LPPP hotline.
- Disseminated more than 63,000 educational pamphlets in 8 languages.
- Educated 6,794 parents via workshops at

community-based organizations, schools, day care centers, Head Start Programs and Women, Infants and Children (WIC) centers.

- Provided information at 28 health fairs, with 6,610 participants.
- Trained 29 community leaders and social services providers to educate local residents.
- Conducted 22 training sessions with 80 participants for building owners, superintendents and contractors.

In 2003, LPPP also implemented new community outreach efforts.

Radio Campaign

The LPPP ran a radio campaign aired in both English and Spanish on radio stations serving high-

risk populations. The radio message informed listeners about the dangers of lead, the importance of having young children tested for lead poisoning and the rights of tenants in multiple dwellings with young children to have lead paint hazards repaired by their landlords.

Litargirio Health Alert

The LPPP issued a health advisory to warn the public about the hazards of *Litargirio*, a product sold in some botanicas and known to cause lead poisoning if accidentally swallowed or inhaled. It is used primarily by the Dominican community as a deodorant and as a remedy for foot rash. The alert was covered widely in the English and Spanish media including press and cable television. The LPPP also organized outreach efforts targeted to botanicas and organizations serving the Dominican community in NYC.

Immigrant Lead Awareness Program

The LPPP launched the Immigrant Lead Awareness Program, an outreach effort directed at community-based and social service organizations serving immigrant populations at high risk for lead poisoning.

The goal of the Immigrant Lead Awareness Program is to educate these organizations about lead poisoning prevention and provide them with educational materials, in appropriate languages, in order to raise awareness about lead poisoning among their clients.

In 2003, the LPPP's Immigrant Lead Awareness Program contacted 345 community-based groups, and provided them with 18,000 pieces of literature including posters and brochures.

Message to Parents and Caregivers

Parents play an important role in lead poisoning prevention. Follow these steps to protect children from lead:

- Report peeling or damaged paint to your landlord. If no action is taken to correct peeling paint in your apartment, call 311 and ask for code enforcement at the NYC Department of Housing Preservation and Development (HPD).
- Keep children away from peeling or damaged paint and home repairs that disturb lead paint.
- Use a wet mop or wet rag to frequently clean floors, windowsills and window wells where lead dust tends to accumulate.
- Frequently wash children's hands, toys and pacifiers.
- Home repair work should always be done safely using dust control methods, including wet scraping painted surfaces, isolating the work area, and proper clean-up.
- Avoid foods, spices and other products known to contain lead.
- Have your child tested for lead poisoning, especially at 1 and 2 years of age.

Testing Children for Lead Poisoning

Early detection of lead poisoning is essential for protecting children from additional exposure and targeting prevention activities. Through its education and outreach efforts, LPPP publicizes the importance of blood lead screening for young children. Screening is promoted through media campaigns; outreach to tenant, parent, and service organizations, and materials and presentations for health care providers.

Promoting Screening by Targeting Health Care Providers

In 2003, LPPP promoted screening and proper management of lead-poisoned children by:

- Educating doctors and nurses at professional forums.
- Encouraging health care providers to assess high-risk pregnant women for lead poisoning, especially in immigrant communities.
- Continuing its partnership with the DOHMH Immunization Program to create an integrated database of lead testing and immunization records. This database will facilitate outreach to

health care providers and provides them with access to lead and immunization information on their patients.

Improving Screening among Medicaid-enrolled Children

In 2003, LPPP expanded its data-sharing project with Medicaid Managed Care Organizations (MMCOs), from 3 MMCOs in 2002 to all 17 MMCOs under contract with New York City to provide services for Medicaid eligible children. The MMCOs and their affiliated providers are an ideal target for LPPP's efforts to increase screening among Medicaid-enrolled children in NYC as about 70% of those children are now enrolled in managed care. In this data-sharing project, information on children enrolled in MMCOs and data from LPPP's database of blood lead tests are used to identify children who have not received blood lead tests. Each MMCO follows up with the children's providers and encourages them to order the necessary blood lead tests.

Providing Environmental Services and Case Coordination for Lead-Poisoned Children

The LPPP provides environmental services and case coordination for lead-poisoned children. These interventions are guided by blood lead level.

For Children with BLLs of 10–19 µg/dL

In 2003, 3,658 children, less than 18 years of age, were newly identified with BLLs of 10–19 µg/dL.

The LPPP sends letters to families and medical providers of these children. The letters to families advise them to:

- Get a follow-up blood lead test for the child.
- Report any peeling paint conditions to their landlord for repair and to contact the NYC Department of Housing Preservation and Development (HPD) if repairs are not made.

- Take practical steps to prevent lead poisoning in the home.
- Call the LPPP information line with any questions.

The LPPP's letters to health care providers of children with BLLs of 10–19 µg/dL urge them to perform follow-up blood lead tests and make them aware of lead poisoning prevention options for NYC families.

For Children with Environmental Intervention Blood Lead Levels (EIBLLs)

In 2003, 587 children less than 18 years of age, were newly identified at the Environmental Blood Lead Levels (EIBLL), defined as a BLL ≥ 20 µg/dL, or two BLLs of 15–19 µg/dL from tests taken at least 3 months apart.

The LPPP inspects the homes and supplementary addresses of children with EIBLLs and orders the building owners to abate lead paint hazards that are identified.

In 2003, LPPP provided the following services to children in the EIBLL group:

- Inspected 641 primary addresses and 144 supplementary addresses, such as the homes of babysitters or relatives.

- Ordered lead paint hazard abatement in 426 dwelling units.
- Conducted 2,634 follow-up inspections to monitor safe work practices and abatement progress.
- Referred 143 apartments to the Emergency Repair Program of HPD after the landlords failed to make repairs as ordered. Landlords are charged for repairs made by HPD.

For children with EIBLLs, LPPP also:

- Contacts the child's parent/guardian and health care provider with information on lead poisoning and the importance of follow-up testing.
- Provides the family with information about reducing lead exposures and about lead abatement in their home.
- May refer families to temporary lead-safe housing during lead abatement.
- Assists medical providers and families with referrals for developmental assessment and early intervention services.

Monitoring and Medical Management of Lead-Poisoned Pregnant Women

Monitoring Lead-Poisoned Pregnant Women

A pregnant woman who has lead poisoning passes the lead in her blood to the fetus. Research suggests that children born with elevated blood lead levels are at risk for cognitive and other developmental delays similar to those associated

with childhood lead poisoning. In addition, lead poisoning in pregnant women may be associated with spontaneous abortion, stillbirth, pre-term delivery, low birth weight, and pregnancy-related hypertension.

The LPPP provides follow-up services to pregnant women with BLLs ≥ 20 µg/dL and their newborns. LPPP staff members:

- Identify potential sources of lead exposure for each woman.
- Recommend ways to eliminate or reduce lead exposure.
- Consult with the woman's health care provider and encourage follow-up BLL monitoring for the woman as well as post-natal testing of her baby.
- Provide follow-up for children born with elevated blood lead levels.

In 2003, LPPP provided services for 38 pregnant women with BLLs \geq 20 $\mu\text{g}/\text{dL}$.

Of these 38 women:

- All were foreign-born (by comparison, in 2002, 52% of all NYC women giving birth were foreign-born).
- 71% were from Mexico.
- 16% had immigrated to the U.S. within the year prior to their initial blood lead test.

- 26% reported eating dirt, clay or crushed pottery during pregnancy.
- None of the women reported recent occupational exposure to lead.

Improving the Medical Management of Lead-Poisoned Pregnant Women

In 2003, LPPP released a Request for Proposals and subsequently contracted with the Mount Sinai School of Medicine to convene a peer review panel to develop recommendations for medical management of pregnant women with elevated BLLs as well as recommendations for outreach to health care providers and women at risk of lead exposure to promote screening and risk reduction. Recommendations from this panel will be used to develop protocols and guidelines for the LPPP and for medical providers.

Prevention Guidelines for Prenatal Care Providers

New York State requires prenatal care health providers to:

- Provide anticipatory guidance on lead poisoning prevention to all pregnant women.
- Assess lead exposure risk of pregnant women at their first prenatal visit.
- Test, or refer for blood lead testing, pregnant women found to be at risk.
- Provide pregnant women who have a BLL \geq 10 $\mu\text{g}/\text{dL}$ with risk reduction counseling.
- Refer women with possible occupational exposure to an occupational health clinic.

Surveillance and Research

Surveillance of blood lead levels, screening rates and lead poisoning cases throughout the City is a critical function of LPPP. Each year, LPPP receives over 400,000 blood lead test results for more than 300,000 children. These testing data, along with other data collected through environmental and care coordination services, are maintained within a sophisticated computerized data management system.

The LPPP routinely complements its surveillance and case management data with other publicly available demographic and housing data to accomplish the following:

- Target appropriate interventions for high-risk groups by identifying geographic and demographic patterns of lead poisoning
- Enhance prevention activities by supporting data-sharing projects with housing and health groups.
- Ensure timeliness of service delivery by tracking individual children with elevated BLLs.
- Evaluate the impact of program activities on screening and lead poisoning rates as well as the quality and timeliness of service delivery.
- Research risk factors for lead poisoning in NYC and assess effectiveness of interventions.

Strategies for Continued Progress

New York City has made great progress in reducing childhood lead poisoning as environmental sources have diminished and public health interventions have been employed. Yet, lead poisoning remains an important public health problem. Continued success will require creative, new strategies as well as continued implementation of successful programs. These strategies include: utilizing surveillance data to identify and target high risk groups and neighborhoods, expanding community partnerships, and increasing culturally and linguistically appropriate outreach to immigrant populations. Our goal is to implement innovative programs in high-risk communities that:

- Eliminate or reduce lead paint hazards in homes
- Work with housing organizations, landlords, tenants, contractors, building supplies retailers and other agencies to increase knowledge of lead safe work practices, and NYC laws.
- Improve screening for children through vigorous outreach to health care providers, community organizations and families, and through data-matching projects to identify children that have not been tested.
- Identify non-paint lead sources and develop effective prevention activities through research, investigations and collaborations with organizations serving high-risk groups.
- Prevent lead poisoning in pregnant women through improved outreach, education, prenatal risk assessment, and appropriate medical management.

Endnotes

- ¹ In this report, neighborhoods are defined as those established by the United Hospital Fund, which has aggregated contiguous NYC ZIP codes into 42 neighborhoods.
- ² The 10 neighborhoods were: Bedford Stuyvesant-Crown Heights, East Flatbush-Flatbush, Williamsburg-Bushwick, East New York and Borough Park in Brooklyn; Crotona-Tremont and Fordham-Bronx Park in the Bronx; Washington Heights-Inwood in Manhattan; and Southwest Queens and West Queens in Queens.
- ³ The 9 neighborhoods were: Bedford Stuyvesant-Crown Heights, East Flatbush-Flatbush, Williamsburg-Bushwick, East New York and Borough Park in Brooklyn; Fordham-Bronx Park in the Bronx; Washington Heights-Inwood in Manhattan; and Jamaica and West Queens in Queens.

Appendix

Table A-1

New York City intervention protocols for lead-poisoned children.

Category	BLL ^(b) (a)	Intervention
Elevated BLL ^(b)	≥ 10 $\mu\text{g}/\text{dL}$	Contact with family and medical provider regarding exposure and follow-up blood testing; these services are provided to all lead-poisoned children, including those with BLL of 10–19 $\mu\text{g}/\text{dL}$ and those with an Environmental Intervention Blood Lead Level (EIBLL).
EIBLL ^(c)	≥ 20 $\mu\text{g}/\text{dL}$ or 2 BLLs ≥ 3 months apart of 15–19 $\mu\text{g}/\text{dL}$	Environmental assessment to identify exposure or sources; enforcement of lead-based paint hazard abatement requirements.

(a) Blood Lead Levels (BLLs) are measured in micrograms (μg) of lead per deciliter (dL) of blood.

(b) Since 1992, the NYC Health Code has defined elevated lead level as a BLL ≥ 10 $\mu\text{g}/\text{dL}$.

(c) Environmental Intervention Blood Lead Level (EIBLL) is the term used by the Lead Poisoning Prevention Program (LPPP) to designate cases for environmental inspection and enforcement of abatement requirements. EIBLL was defined as either 1 BLL ≥ 20 $\mu\text{g}/\text{dL}$ or 2 BLLs of 15–19 $\mu\text{g}/\text{dL}$ (taken at least 3 months apart) from July 1, 1999 to August 1, 2004.

Table A-2

Demographic and environmental profile of children newly identified with blood lead levels at or above the Environmental Intervention Blood Lead Level, ages 0 months to less than 18 years (n = 587) and ages 6 months to less than 6 years (n = 473): New York City, 2003.

	0 years – < 18 years			6 months – < 6 years		
	Number EIBLL ^(a)	Percent EIBLL	EIBLL Rate (number per 1,000 tested)	Number EIBLL ^(a)	Percent EIBLL	EIBLL Rate (number per 1,000 tested)
Total	587	100.0%	1.5	473	100.0%	1.6
Age						
Less than 6 months old	14	2.4%	6.6 ^(b)	—	—	—
6 months to less than 1 year old	23	3.9%	0.8	23	4.9%	0.8
1 year old	153	26.1%	2.2	153	32.3%	2.2
2 years old	137	23.3%	2.3	137	29.0%	2.3
3 years old	71	12.1%	1.4	71	15.0%	1.4
4 years old	60	10.2%	1.1	60	12.7%	1.1
5 years old	29	4.9%	0.7	29	6.1%	0.7
6 to less than 18 years old	100	17.0%	1.2	—	—	—
Gender						
Female	266	45.3%	1.5	212	44.8%	1.5
Male	321	54.7%	1.7	261	55.2%	1.8
Borough						
Manhattan	57	9.7%	1.0	45	9.5%	1.0
Bronx	100	17.0%	1.2	84	17.8%	1.3
Brooklyn	255	43.4%	1.9	202	42.7%	2.0
Queens	142	24.2%	1.4	113	23.9%	1.4
Staten Island	33	5.6%	2.4	29	6.1%	2.6
Race/ethnicity^(c)						
Hispanic	229	39.0%		177	37.4%	
Non-Hispanic Black	198	33.7%		160	33.8%	
Non-Hispanic White	51	8.7%		47	9.9%	
Asian	97	16.5%		79	16.7%	
Other/Unknown	12	2.0%		10	2.1%	
Blood lead level at case assignment ($\mu\text{g}/\text{dL}$)						
15–19	68	11.6%		55	11.6%	
20–29	398	67.8%		321	67.9%	
30–39	77	13.1%		60	12.7%	
40–49	26	4.4%		21	4.4%	
50–59	10	1.7%		9	1.9%	
60–69	3	0.5%		3	0.6%	
≥ 70	5	0.9%		4	0.8%	

Table A-2. (continued)

	0 years – < 18 years			6 months – < 6 years		
	Number EIBLL ^(a)	Percent EIBLL	EIBLL Rate (number per 1,000 tested)	Number EIBLL ^(a)	Percent EIBLL	EIBLL Rate (number per 1,000 tested)
Year primary residence was built						
1939 or earlier	475	80.9%		394	83.3%	
1940–1949	22	3.7%		18	3.8%	
1950–1959	40	6.8%		29	6.1%	
1960–1969	19	3.2%		11	2.3%	
1970–present	31	5.3%		21	4.4%	
Size of the building where the child resides						
Building has less than 3 dwelling units	200	34.1%		174	36.8%	
Building has 3 or more dwelling units	387	65.9%		299	63.2%	
Lead paint hazard identified at child's residence^(d)						
No lead paint hazard identified	205	34.9%		148	31.3%	
Lead paint hazard identified	382	65.1%		325	68.7%	

- (a) Environmental Intervention Blood Lead Level (EIBLL) was defined as a venous BLL > 20 µg/dL or 2 blood lead levels 15–19 µg/dL that were drawn at least 3 months apart where the second test was a venous sample.
- (b) The case rate for children younger than 6 months was very high because many of the infants tested were referred for testing due to their high risk for lead poisoning from prenatal exposure.
- (c) Data on race/ethnicity were missing from a substantial number of tests reported to the LPPP; thus, case rates could not be calculated for this indicator because denominator data were not available.
- (d) This included the child's primary residence and supplementary addresses where the child spent considerable periods of time. Hazards were identified by March 31, 2004.

Table A-3

Numbers and rates of (1) children tested for lead poisoning; (2) children with elevated blood lead levels; and (3) children with an Environmental Intervention Blood Lead Level, ages 0 months to less than 18 years, by borough, and United Hospital Fund Neighborhood: New York City, 2003.

Ages 0 months to less than 18 years

	(1) Tests ^(a)		(2) Elevated blood lead levels ^(b)			(3) Environmental Intervention Blood Lead Levels (EIBLL) ^(c)				
	Tested	Number	Newly identified BLL ≥ 10 µg/dL	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	Low	High	95% CI
United Hospital Fund Neighborhood										
New York City total		385,621		4,234	11.0	587	1.52	1.40	1.65	
NYC, unknown borough		314		3	—	0	—	—	—	
Bronx		84,544		772	9.1	100	1.18	0.96	1.44	
Bronx unknown or invalid ZIP code		3,752		9	—	0	—	—	—	
Crotona-Tremont		14,063		183	13.0	19	1.35	0.81	2.11	
Fordham-Bronx Park		16,972		154	9.1	25	1.47	1.00	2.24	
High Bridge-Morrisania		13,557		152	11.2	19	1.40	0.84	2.19	
Hunts Point-Mott Haven		9,531		90	9.4	7	0.73	0.30	1.51	
Kingsbridge-Riverdale		3,365		11	3.3	3	0.89	0.18	2.61	
Northeast Bronx		8,766		71	8.1	12	1.37	0.71	2.39	
Pelham-Throgs Neck		14,538		102	7.0	15	1.03	0.58	1.70	
Brooklyn		133,093		1,717	12.9	255	1.92	1.69	2.17	
Brooklyn unknown or invalid ZIP code		6,575		20	—	0	—	—	—	
Bedford Stuyvesant-Crown Heights		22,362		272	12.2	46	2.06	1.51	2.74	
Bensonhurst-Bay Ridge		5,946		52	8.7	15	2.52	1.41	4.16	
Borough Park		12,176		168	13.8	25	2.05	1.33	3.03	
Canarsie-Flatlands		9,329		70	7.5	9	0.96	0.44	1.83	
Coney Island-Sheepshead Bay		9,437		133	14.1	20	2.12	1.29	3.27	
Downtown-Brooklyn Heights-Park Slope		7,030		108	15.4	12	1.71	0.88	2.98	
East Flatbush-Flatbush		19,112		281	14.7	43	2.25	1.63	3.03	
East New York		13,732		226	16.5	30	2.18	1.47	3.12	
Greenpoint		5,265		73	13.9	11	2.09	1.04	3.74	
Sunset Park		6,186		94	15.2	14	2.26	1.24	3.80	
Williamsburg-Bushwick		15,943		220	13.8	30	1.88	1.27	2.69	

Table A-3. (continued)

United Hospital Fund Neighborhood	(1) Tests ^(a)		(2) Elevated blood lead levels ^(b)		(3) Environmental Intervention Blood Lead Levels (EIBLL) ^(c)				
	Tested		Newly identified BLL ≥ 10 $\mu\text{g/dL}$		Rate EIBLL /1,000 tested		Newly identified EIBLL		
	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI Low	95% CI High	Number
Manhattan	55,871	11.7	655	11.7	57	1.02	0.77	1.32	
Manhattan unknown or invalid ZIP code	8,320	—	40	—	0	—	—	—	—
Central Harlem-Morningside Heights	7,308	12.9	94	12.9	13	1.78	0.95	3.04	
Chelsea-Clinton	1,866	16.6	31	16.6	2	1.07	0.13	3.87	
East Harlem	5,961	17.6	105	17.6	5	0.84	0.27	1.96	
Gramercy Park-Murray Hill	1,465	7.5	11	7.5	1	0.68	0.02	3.80	
Greenwich Village-Soho	1,222	28.6	35	28.6	0	0.00	—	—	
Lower Manhattan	752	10.6	8	10.6	0	0.00	—	—	
Union Square-Lower East Side	4,009	16.2	65	16.2	7	1.75	0.70	3.60	
Upper East Side	4,455	8.5	38	8.5	4	0.90	0.24	2.30	
Upper West Side	5,297	13.0	69	13.0	2	0.38	0.05	1.36	
Washington Heights-Inwood	15,216	10.4	159	10.4	23	1.51	0.96	2.27	
Queens	98,207	9.7	955	9.7	142	1.45	1.22	1.70	
Queens unknown or invalid ZIP code	5,525	—	22	—	0	—	—	—	
Bayside-Little Neck	1,911	3.1	6	3.1	3	1.57	0.32	4.59	
Flushing-Clearview	6,954	6.6	46	6.6	5	0.72	0.23	1.68	
Fresh Meadows	3,420	3.2	11	3.2	2	0.58	0.07	2.11	
Jamaica	15,153	9.4	142	9.4	29	1.91	1.28	2.75	
Long Island City-Astoria	8,089	9.8	79	9.8	10	1.24	0.59	2.27	
Ridgewood-Forest Hills	8,689	7.9	69	7.9	9	1.04	0.47	1.97	
Rockaway	5,095	9.8	50	9.8	10	1.96	0.94	3.61	
Southeast Queens	7,936	8.8	70	8.8	8	1.01	0.44	1.99	
Southwest Queens	13,706	14.7	202	14.7	21	1.53	0.95	2.34	
West Queens	21,729	11.9	258	11.9	45	2.07	1.51	2.77	
Staten Island	13,592	9.7	132	9.7	33	2.43	1.67	3.41	
Staten Island unknown or invalid ZIP code	132	—	1	—	0	—	—	—	
Port Richmond	2,257	26.6	60	26.6	18	7.98	4.73	12.60	
South Beach-Tottenville	5,066	2.2	11	2.2	1	0.20	0.00	1.10	
Stapleton-St. George	3,685	14.9	55	14.9	13	3.53	1.88	6.03	
Willowbrook	2,452	2.0	5	2.0	1	0.41	0.01	2.27	

(a) Test types: venous, capillary, unspecified.

(b) Elevated blood lead level was defined as a venous, capillary or unspecified BLL ≥ 10 $\mu\text{g/dL}$.

(c) Environmental Intervention Blood Lead Level (EIBLL) was defined as a venous BLL ≥ 20 $\mu\text{g/dL}$, or 2 blood lead levels 15–19 $\mu\text{g/dL}$ that were drawn at least 3 months apart where the second test was a venous sample.

Table A-4

Numbers and rates of (1) children tested for lead poisoning, (2) children with elevated blood lead levels, and (3) children with an Environmental Intervention Blood Lead Level, ages 6 months to less than 6 years, by borough, and United Hospital Fund Neighborhood: New York City, 2003.

United Hospital Fund Neighborhood	(1) Tests ^(a)			(2) Elevated blood lead levels ^(b)		(3) Environmental Intervention Blood Lead Levels (EIBLL) ^(c)				
	Number	Tested		Newly identified BLL ≥ 10 µg/dL		Number	Rate EIBLL /1,000 tested	Newly identified EIBLL		95% CI High
		Percent tested Vital records ^(d)	Census 2000 ^(e)	Number	Rate BLL ≥10 /1,000 tested			Low	High	
New York City total	302,428	48	51	3,413	11.3	473	1.56	1.43	1.71	
NYC, unknown borough	303	—	—	3	—	0	—	—	—	
Bronx	64,934	54	53	630	9.7	84	1.29	1.03	1.60	
Bronx unknown or invalid ZIP code	3,178	—	—	7	—	0	—	—	—	
Crotona-Tremont	10,807	48	48	148	13.7	17	1.57	0.92	2.52	
Fordham-Bronx Park	12,730	52	51	130	10.2	24	1.89	1.21	2.81	
High Bridge-Morrisania	10,525	50	52	122	11.6	15	1.43	0.80	2.35	
Hunts Point-Mott Haven	7,008	54	54	71	10.1	6	0.86	0.31	1.86	
Kingsbridge-Riverdale	2,795	51	49	9	3.2	3	1.07	0.22	3.14	
Northeast Bronx	6,897	61	50	60	8.7	10	1.45	0.70	2.67	
Pelham-Throgs Neck	10,994	51	47	83	7.5	9	0.82	0.37	1.55	
Brooklyn	102,294	47	51	1,379	13.5	202	1.97	1.71	2.27	
Brooklyn unknown or invalid ZIP code	5,708	—	—	13	—	0	—	—	—	
Bedford Stuyvesant-Crown Heights	16,289	54	57	226	13.9	41	2.52	1.81	3.41	
Bensonhurst-Bay Ridge	4,945	37	41	44	8.9	11	2.22	1.11	3.98	
Borough Park	10,169	31	34	135	13.3	19	1.87	1.12	2.92	
Canarsie-Flatlands	7,006	51	48	43	6.1	7	1.00	0.40	2.06	
Coney Island-Sheepshead Bay	7,896	42	44	113	14.3	16	2.03	1.16	3.29	
Downtown-Brooklyn Heights-Park Slope	5,423	34	40	100	18.4	10	1.84	0.88	3.39	
East Flatbush-Flatbush	14,683	50	55	199	13.6	25	1.70	1.10	2.51	
East New York	9,972	57	57	186	18.7	26	2.61	1.70	3.82	
Greenpoint	4,292	32	37	58	13.5	9	2.10	0.96	3.98	
Sunset Park	4,700	36	45	74	15.7	11	2.34	1.17	4.19	
Williamsburg-Bushwick	11,211	55	56	188	16.8	27	2.41	1.59	3.50	

Ages 6 months to less than 6 years

Table A-4. (continued)

United Hospital Fund Neighborhood	(1) Tests ^(a)			(2) Elevated blood lead levels ^(b)		(3) Environmental Intervention Blood Lead Levels (EIBLL) ^(c)			
	Tested			Newly identified BLL ≥ 10 $\mu\text{g}/\text{dL}$		Newly identified EIBLL			
	Number	Percent tested Vital records ^(a)	Percent tested Census 2000 ^(e)	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI Low	95% CI High
Manhattan	45,603	43	56	564	12.4	45	0.99	0.72	1.32
Manhattan unknown or invalid ZIP code	7,319	—	—	37	—	0	—	—	—
Central Harlem-Morningside Heights	5,744	46	50	80	13.9	13	2.26	1.21	3.87
Chelsea-Clinton	1,615	28	46	28	17.3	2	1.24	0.15	4.47
East Harlem	4,519	47	53	82	18.1	3	0.66	0.14	1.94
Gramercy Park-Murray Hill	1,302	22	37	10	7.7	1	0.77	0.02	4.28
Greenwich Village-Soho	1,091	29	39	32	29.3	0	0.00	—	—
Lower Manhattan	639	33	44	8	12.5	0	0.00	—	—
Union Square-Lower East Side	3,285	25	38	58	17.7	4	1.22	0.33	3.12
Upper East Side	4,035	28	39	36	8.9	4	0.99	0.27	2.54
Upper West Side	4,718	33	45	63	13.4	2	0.42	0.05	1.53
Washington Heights-Inwood	11,336	45	55	130	11.5	16	1.41	0.81	2.29
Queens	77,956	50	50	733	9.4	113	1.45	1.19	1.74
Queens unknown or invalid ZIP code	4,099	—	—	17	—	0	—	—	—
Bayside-Little Neck	1,625	54	33	5	3.1	3	1.85	0.38	5.40
Flushing-Clearview	5,918	42	38	34	5.7	4	0.68	0.18	1.73
Fresh Meadows	2,924	48	44	7	2.4	1	0.34	0.01	1.91
Jamaica	11,894	55	54	111	9.3	24	2.02	1.29	3.00
Long Island City-Astoria	6,215	38	44	58	9.3	6	0.97	0.35	2.10
Ridgewood-Forest Hills	6,737	43	45	55	8.2	9	1.34	0.61	2.54
Rockaway	4,173	56	45	44	10.5	8	1.92	0.83	3.78
Southeast Queens	6,203	56	43	50	8.1	7	1.13	0.45	2.33
Southwest Queens	10,510	51	50	161	15.3	17	1.62	0.94	2.59
West Queens	17,658	44	52	191	10.8	34	1.93	1.33	2.69

Table A-4. (continued)

United Hospital Fund Neighborhood	(1) Tests ^(a)		(2) Elevated blood lead levels ^(b)		(3) Environmental Intervention Blood Lead Levels (EIBLL) ^(c)			
	Tested		Newly identified BLL ≥ 10 $\mu\text{g}/\text{dL}$		Newly identified EIBLL			
	Number	Percent tested Vital records ^(d) Census 2000 ^(e)	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI Low	95% CI High
Staten Island	11,338	36	34	9.2	29	2.56	1.71	3.67
Staten Island unknown or invalid ZIP code	115	—	—	—	0	—	—	—
Port Richmond	1,749	33	31	26.3	16	9.15	5.23	14.86
South Beach-Tottenville	4,399	37	34	2.5	1	0.23	0.01	1.27
Stapleton-St. George	2,961	33	34	14.2	12	4.05	2.09	7.08
Willowbrook	2,114	38	37	1.9	0	0.00	—	—

(a) Test types: venous, capillary, unspecified.

(b) Elevated blood lead level was defined as a venous, capillary or unspecified BLL ≥ 10 $\mu\text{g}/\text{dL}$.

(c) Environmental Intervention Blood Lead Level (EIBLL) was defined as a venous ≥ 20 $\mu\text{g}/\text{dL}$, or 2 blood lead levels of 15–9 $\mu\text{g}/\text{dL}$ that were drawn at least 3 months apart, where the second test was a venous sample.

(d) In this column, population counts used as the denominator for percent of children tested were calculated from summing NYC births 1995–2000. Data were obtained from the NYC Department of Health Office of Vital Statistics.

(e) In this column, population counts used as the denominator for the percent of children tested come from the US Census 2000.

Table A-5**Neighborhood codes and their corresponding names, New York City.***

	Code	Neighborhood Name
Bronx		
	BX1	Kingsbridge-Riverdale
	BX2	Northeast Bronx
	BX3	Fordham-Bronx Park
	BX4	Pelham-Throgs Neck
	BX5	Crotona-Tremont
	BX6	High Bridge-Morrisania
	BX7	Hunts Point-Mott Haven
Brooklyn		
	BK1	Greenpoint
	BK2	Williamsburg-Bushwick
	BK3	Downtown-Brooklyn Heights-Park Slope
	BK4	Bedford Stuyvesant-Crown Heights
	BK5	East New York
	BK6	Sunset Park
	BK7	Borough Park
	BK8	East Flatbush-Flatbush
	BK9	Canarsie-Flatlands
	BK10	Bensonhurst-Bay Ridge
	BK11	Coney Island-Sheepshead Bay
Manhattan		
	M1	Washington Heights-Inwood
	M2	Central Harlem-Morningside Heights
	M3	East Harlem
	M4	Upper West Side
	M5	Upper East Side
	M6	Chelsea-Clinton
	M7	Gramercy Park-Murray Hill
	M8	Greenwich Village-Soho
	M9	Union Square-Lower East Side
	M10	Lower Manhattan
Queens		
	Q1	Long Island City-Astoria
	Q2	West Queens
	Q3	Flushing-Clearview
	Q4	Bayside-Little Neck
	Q5	Ridgewood-Forest Hills
	Q6	Fresh Meadows
	Q7	Southwest Queens
	Q8	Jamaica
	Q9	Southeast Queens
	Q10	Rockaway
Staten Island		
	S1	Port Richmond
	S2	Stapleton-St. George
	S3	Willowbrook
	S4	South Beach-Tottenville

* United Hospital Fund (UHF) classifies New York City into 42 neighborhoods, comprised of contiguous ZIP codes.

Need Help or Information?

Call: 311

With just one phone call you can:

- Get information on lead poisoning prevention or treatment;
- Find out how to report peeling paint or unsafe lead-based paint removal work;
- Sign up for free workshops for parents, health-care providers, building owners, and community leaders;
- Get information on early intervention services for children at risk for developmental delays or learning disabilities; and
- Arrange for an LPPP staff member to speak to your organization about lead poisoning prevention.



**Department of Health and Mental Hygiene
The City of New York**

**Michael R. Bloomberg
Mayor**

**Thomas R. Frieden, M.D., M.P.H.
Commissioner**