

Children with Lead Poisoning

DEFINITION

Children with lead poisoning is the percentage of three-year-old children screened for lead poisoning who had elevated blood levels ($\geq 10\mu\text{g/dL}$) at any time prior to December 31, 2004.¹ These data are for children eligible to enter kindergarten in the Fall of 2006 (i.e. born between September 1, 2000 and August 31, 2001).

SIGNIFICANCE

Childhood lead poisoning is one of the most common pediatric health problems, yet it is entirely preventable.² Infants, toddlers and preschool age children are most susceptible to the toxic effects of lead and absorb lead more readily than adults.³ Lead exposure can cause irreversible damage including loss of intelligence, learning disabilities and behavioral problems including aggression. The most acute poisoning can result in severe illness and death.^{4,5,6} The societal costs of childhood lead poisoning include the loss of future earnings due to decreased cognition as well as medical, special education and criminal justice costs.^{7,8}

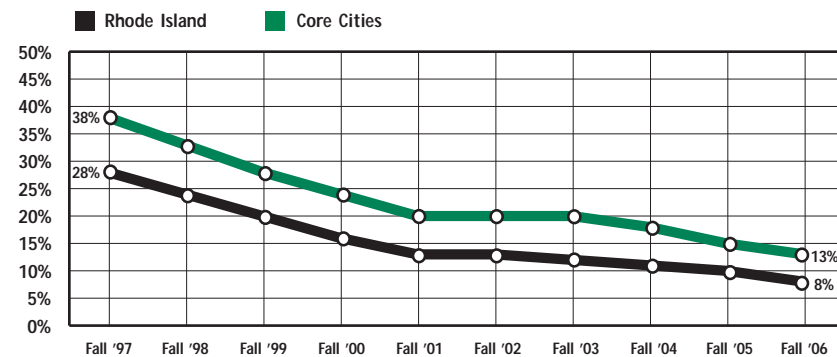
Children living in homes built before 1978 (when lead paint was banned from interior use in the U.S.) are at risk for lead poisoning.⁹ Low-income and minority children are particularly likely

to be affected.¹⁰ Children in older homes undergoing renovation are also at risk.¹¹ The lack of affordable housing in many communities forces many low-income families to live in older dwellings with deteriorating lead paint, placing children at increased risk for exposure to lead.¹² Inadequate nutrition, which is more common in low-income children, further increases susceptibility to lead poisoning.¹³

The Centers for Disease Control and Prevention have recognized that lead exposure at any level is harmful and recommend a focus on primary prevention of lead exposure.^{14,15,16} Prevention efforts should target the systematic reduction of lead paint in housing, especially old, poorly maintained housing, as the most important source of lead exposure in young children.¹⁷

Rhode Island children have higher lead poisoning rates than children in the rest of the country. Between 1999 and 2000, the most recent time period for which national data is available, the national rate of lead poisoning for children under age 6 was 2.2%, compared to 9.8% for Rhode Island.^{18,19} The Rhode Island rate has since decreased for children under age 6 to 5.1% in 2004.²⁰

Children Entering Kindergarten with History of Lead Poisoning, Rhode Island and Core Cities, 1997- 2006



Source: Rhode Island Department of Health, Division of Family Health and Division of Environmental Health, Childhood Lead Poisoning Prevention Program, 1996-2004.

◆ Despite declines in lead poisoning rates, kindergarten children living in core cities are nearly three times as likely to have a history of elevated blood lead levels (13%) as those in the remainder of the state (5%).²¹ Of the 7 children hospitalized for severe lead poisoning during 2004, 5 resided in Providence, 1 in West Warwick and 1 in Cumberland.²²

◆ In Rhode Island, when a child is significantly lead poisoned, an inspection of the child's home is offered.²³ The Department of Health sends certified lead inspectors to determine whether lead hazards are present and to work with property owners to make the property lead-safe. In Rhode Island in 2004, 168 inspections were offered; of these 119 were performed.²⁴

◆ In 2002, the Rhode Island General Assembly passed the Lead Hazard Mitigation Act, comprehensive legislation that places a strong emphasis on enforcement mechanisms for lead safety in housing and strengthens tenants' rights. The Lead Hazard Mitigation Act strengthens requirements for timely abatement by landlords, requires timely referral for prosecution in the event adequate abatement is not undertaken and creates tenant remedies to enforce the provision of the Act through agency intervention or privately-initiated court action.²⁵

Table 18.

Lead Poisoning in Children Entering Kindergarten in the Fall of 2006

CITY/TOWN	NUMBER TESTED FOR LEAD POISONING	# SCREENED POSITIVE >=10 UG/DL	% CHILDREN >=10 UG/DL
Barrington	211	10	4.7%
Bristol	224	20	8.9%
Burrillville	192	17	8.9%
Central Falls	464	80	17.2%
Charlestown	124	7	5.6%
Coventry	444	20	4.5%
Cranston	947	54	5.7%
Cumberland	419	11	2.6%
East Greenwich	185	6	3.2%
East Providence	552	35	6.3%
Exeter	63	1	1.6%
Foster	57	2	3.5%
Glocester	70	5	7.1%
Hopkinton	115	5	4.3%
Jamestown	43	2	4.7%
Johnston	331	14	4.2%
Lincoln	258	6	2.3%
Little Compton	39	2	5.1%
Middletown	213	8	3.8%
Narragansett	147	7	4.8%
New Shoreham	11	2	18.2%
Newport	345	45	13.0%
North Kingstown	395	13	3.3%
North Providence	318	8	2.5%
North Smithfield	109	0	0.0%
Pawtucket	1,167	116	9.9%
Portsmouth	197	6	3.0%
Providence	3,223	503	15.6%
Richmond	92	9	9.8%
Scituate	138	2	1.4%
Smithfield	198	3	1.5%
South Kingstown	351	20	5.7%
Tiverton	167	14	8.4%
Warren	128	11	8.6%
Warwick	932	35	3.8%
West Greenwich	73	1	1.4%
West Warwick	457	26	5.7%
Westerly	279	16	5.7%
Woonsocket	753	74	9.8%
Unknown Residence	104	2	1.9%
Core Cities	6,409	844	13.2%
Remainder of State	8,022	372	4.6%
Rhode Island	14,535	1,218	8.4%

Source of Data for Table/Methodology

Rhode Island Department of Health, Division of Family Health and Division of Environmental Health, Childhood Lead Poisoning Prevention Program.

Core cities are Central Falls, Newport, Pawtucket, Providence, West Warwick and Woonsocket.

Data for children entering kindergarten in the Fall of 2006 reflect the number of Rhode Island children eligible to enter school in the Fall of 2006 (i.e. born between 9/1/00 and 8/31/01) who screened positive for lead poisoning at any time in their lives prior to the end of December 2004. Data are based on the highest lead test result through December 2004. Data include both venous and capillary tests. The denominator is the number of children entering school in the Fall of 2006 who were screened for lead poisoning.

References for Indicator

¹ Rhode Island Department of Health, Division of Family Health and Division of Environmental Health, Childhood Lead Poisoning Prevention Program. Data are based on the highest lead test result through December 2004. Data include both venous and capillary tests.

^{2,10} Centers for Disease Control and Prevention. (December 8, 2000). Recommendation for blood lead screening of young children enrolled in Medicaid: Targeting a group at high risk. *Morbidity and Mortality Weekly Report Recommendations and Reports*, 49(RR-14), 1-24.

^{3,4,9} Office of Pollution Prevention and Toxins. (2004). *Lead in paint, dust, and soil*. Washington, DC: U.S. Environmental Protection Agency.

^{5,11} Centers for Disease Control and Prevention. (2002). *Managing elevated blood lead levels among young children*. Atlanta, GA: U.S. Department of Health and Human Services.

^{6,7} Wakefield, J. (2002). Lead history – Violent future? *Environmental Health Perspectives*, 110(10), 575-580.

⁸ Brown, M. J. (2002). Costs and benefits of enforcing housing policies to prevent childhood lead poisoning. *Medical Decision Making*, 22(06), 482-492.

¹² 2002 Annual report. (2002). Providence, RI: Housing Resources Commission.

¹³ *The facts on lead*. (2001). Hanover, NH: Toxic Metals research Program, Dartmouth College.

¹⁴ Canfield, R., Henderson, C., Cory-Slechta, D., Cox, C., Jusko, T. & Lanphear, B. (April 17, 2003). Intellectual impairment in children with blood lead concentrations below 10 ug per deciliter. *The New England Journal of Medicine*, 348(16), 1517-1526.

¹⁵ Grosse, S., Matte, T., Schwartz, J., & Jackson, R. (2002). Economic gains resulting from the reduction in children's exposure to lead in the United States. *Environmental Health Perspectives*, 110(6), 563-569.

¹⁶ Homa, D., Lead Poisoning Prevention Branch, Division of Emergency and Environmental Health Services, Centers for Disease Control and Prevention (personal communication, February 2004).

¹⁷ Centers for Disease Control and Prevention. (2003). Surveillance for elevated blood lead levels among children — United States, 1997–2001. *Morbidity and Mortality Weekly Report Surveillance Summaries*, 52(SS-10), 1-24.

¹⁸ Centers for Disease Control and Prevention. (September 12, 2003). *Second national report on human exposure to environmental chemicals*. Atlanta, GA: U.S. Department of Health and Human Services.

^{19,20,21,22,24} Rhode Island Department of Health, Division of Family Health and Division of Environmental Health, Childhood Lead Poisoning Prevention Program, 2000 and 2004.

²³ In Rhode Island, a child is considered to be "significantly lead poisoned" if they have a single venous blood test result of 20 ug/dL or greater or any two tests (capillary or venous) equal to or greater than 15 ug/dL and at least 90 days apart but no more than 365 days apart.

²⁵ Lead Hazard Mitigation Act, Rhode Island General Laws 42-128.1.