

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 (>10ug/dL) at any time prior to December 31, 2003.¹ These data are for children eligible to enter kindergarten in the fall of 2005 (i.e. born between September 1, 1999 and August 31, 2000).

SIGNIFICANCE

Childhood lead poisoning is one of the most common pediatric health problems, yet it is entirely preventable. Infants, toddlers and preschool age children are most susceptible to the toxic effects of lead and absorb lead more readily than adults.² 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.^{3,4,5} 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.^{6,7}

All children living in homes built before 1978 (when lead paint was banned from interior use in the United States) are at risk for lead poisoning. Low-income, minority and urban children are particularly likely to be

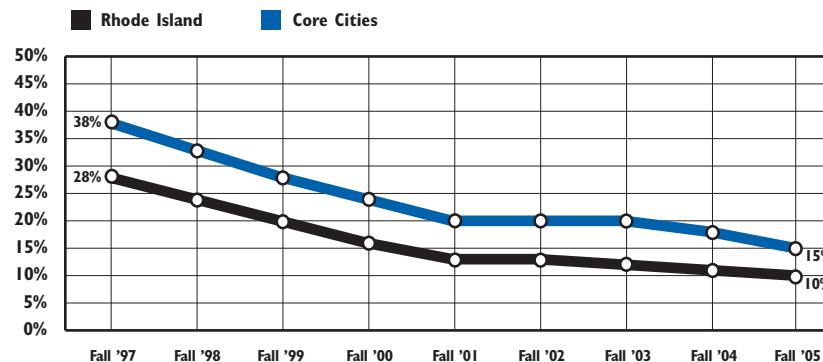
affected.^{8,9} Children in older homes undergoing renovation are also at risk.¹⁰

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.¹¹ Inadequate nutrition and anemia, which are more common in low-income children, further increase susceptibility to lead poisoning.¹²

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.^{13,14,15} 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.¹⁶

In Rhode Island, identification of a child as significantly lead poisoned requires that a lead inspection of the child's home be offered.¹⁷ 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 2003, there were 184 inspections offered; of these 115 were performed.¹⁸

Children Entering Kindergarten with History of Lead Poisoning, Rhode Island and Core Cities, 1997- 2005



Source: Rhode Island Department of Health, Division of Family Health and Division of Environmental Health, Childhood Lead Poisoning Prevention Program, 1995-2003.

- ◆ Despite declines in lead poisoning rates, kindergarten children living in core cities are still more than twice as likely to have a history of elevated blood lead levels (15%) as those in the remainder of the state (6%).¹⁹ Of the 5 children hospitalized for severe lead poisoning during 2003, 3 resided in Providence and 2 in Central Falls.²⁰
- ◆ 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 and penalties 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.²¹
- ◆ The Centers for Disease Control and Prevention recommend a comprehensive, multidisciplinary approach to the treatment of lead poisoning, including repeat blood tests to monitor lead levels, medical management, house inspections, removal of lead hazards, child development and social services, parent education and ongoing monitoring for developmental problems that may arise for children at key transition points.^{22,23}

Table 18.

Lead Poisoning in Children Entering Kindergarten in the Fall of 2005

CITY/TOWN	NUMBER TESTED FOR LEAD POISONING	# SCREENED POSITIVE >=10 UG/DL	% CHILDREN >=10 UG/DL
Barrington	244	11	4.5%
Bristol	254	18	7.1%
Burrillville	193	15	7.8%
Central Falls	454	76	16.7%
Charlestown	109	3	2.8%
Coventry	449	12	2.7%
Cranston	910	56	6.2%
Cumberland	385	17	4.4%
East Greenwich	152	11	7.2%
East Providence	588	44	7.5%
Exeter	77	2	2.6%
Foster	54	5	9.3%
Glocester	88	8	9.1%
Hopkinton	125	4	3.2%
Jamestown	54	3	5.6%
Johnston	323	23	7.1%
Lincoln	213	10	4.7%
Little Compton	43	3	7.0%
Middletown	208	14	6.7%
Narragansett	175	8	4.6%
New Shoreham	7	2	28.6%
Newport	383	62	16.2%
North Kingstown	395	20	5.1%
North Providence	328	17	5.2%
North Smithfield	115	5	4.3%
Pawtucket	1,193	143	12.0%
Portsmouth	203	13	6.4%
Providence	3,203	586	18.3%
Richmond	116	6	5.2%
Scituate	143	5	3.5%
Smithfield	188	3	1.6%
South Kingstown	366	37	10.1%
Tiverton	177	9	5.1%
Warren	128	10	7.8%
Warwick	980	42	4.3%
West Greenwich	58	2	3.4%
West Warwick	472	30	6.4%
Westerly	266	20	7.5%
Woonsocket	693	80	11.5%
Unknown Residence	236	12	5.1%
Core Cities	6,398	977	15.3%
Remainder of State	8,114	458	5.6%
Rhode Island	14,748	1,447	9.8%

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 2005 reflect the number of RI children eligible to enter school in the Fall of 2005 (i.e. born between 9/1/99 and 8/31/00) who screened positive for lead poisoning at any time in their lives prior to the end of December 2003. Data are based on the highest lead test result through December 2003. Data include both venous and capillary tests.

The denominator is the number of children entering school in the fall of 2005 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 2003. Data include both venous and capillary tests.
- ^{2,12} Farley, D. (January-February, 1998). Dangers of Lead Still Linger. *FDA Consumer*. Washington, DC: U.S. Food and Drug Administration.
- ^{3,8,22} *Screening Young Children for Lead Poisoning: Guidelines for State and Local Public Health Officials*. (November 1997). Atlanta, GA: Centers for Disease Control and Prevention.
- ^{4,10,23} *Managing Elevated Blood Lead Levels Among Young Children*. (2002). Atlanta, GA: Centers for Disease Control and Prevention.
- ^{5,6} Wakefield, J. (October 2002). Lead History – Violent Future? *Environmental Health Perspectives*, Vol. 110, No. 10, 575-580.
- ⁷ Brown, M.J. (November-December 2002). Costs and Benefits of Enforcing Housing Policies to Prevent Childhood Lead Poisoning. *Health Economics*.
- ^{9,11} 2002 Annual Report. (March 2002). Providence, RI: Housing Resources Commission.

¹⁹ Rhode Island Department of Health, Division of Family Health and Division of Environmental Health, Childhood Lead Poisoning Prevention Program. Data are for children entering kindergarten in the fall of 2005. Data are based on the highest lead screening test result at any time in the child's life prior to December 31, 2003. Data include both venous and capillary tests.

¹³ Canfield, R. et al. (April 17, 2003). Intellectual Impairment in Children with Blood Lead Concentrations below 10 ug per Deciliter. *The New England Journal of Medicine*, Vol. 348, No.16.

¹⁴ Grosse, S. et al. (June 2002). Economic Gains Resulting from the Reduction in Children's Exposure to Lead in the United States. *Environmental Health Perspectives*, Vol. 110, No. 6.

¹⁵ Personal communication with David Homa, PhD, MPH, Lead Poisoning Prevention Branch, Division of Emergency and Environmental Health Services, Centers for Disease Control and Prevention (February 2004), regarding CDC Policy Statement Regarding Blood Lead Level of Concern.

¹⁶ Department of Health and Human Services and Centers for Disease Control and Prevention. (September 12, 2003). *Morbidity and Mortality Weekly Report*, Vol. 52, No. SS-10.

¹⁷ 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.

^{18,20} Rhode Island Department of Health, Division of Family Health and Division of Environmental Health, Childhood Lead Poisoning Prevention Program, January-December, 2003.

²¹ Lead Hazard Mitigation Act. The State of Rhode Island General Assembly. www.rilin.state.ri.us/PublicLaws/law02/law02188.htm.