

Children with Lead Poisoning

DEFINITION

Children with lead poisoning is the percentage of three-year-old children with a confirmed elevated blood lead level (≥ 10 mcg/dL) at any time prior to December 31, 2009.¹ These data are for children eligible to enter kindergarten in the fall of 2011 (i.e., children born between September 1, 2005 and August 31, 2006).

SIGNIFICANCE

Lead poisoning is a preventable childhood disease.² Infants, toddlers and preschool-age children are most susceptible to the toxic effects of lead because they absorb lead more readily than adults and have inherent vulnerability due to developing central nervous systems.³ Lead exposure at even very low levels can cause irreversible damage including loss of intelligence, impaired cognitive, motor, and physical abilities and behavioral problems. Though rare, acute poisoning can result in severe illness and death.^{4,5} The societal costs of childhood lead poisoning include the loss of future earnings due to decreased cognition and medical and special education costs.^{6,7}

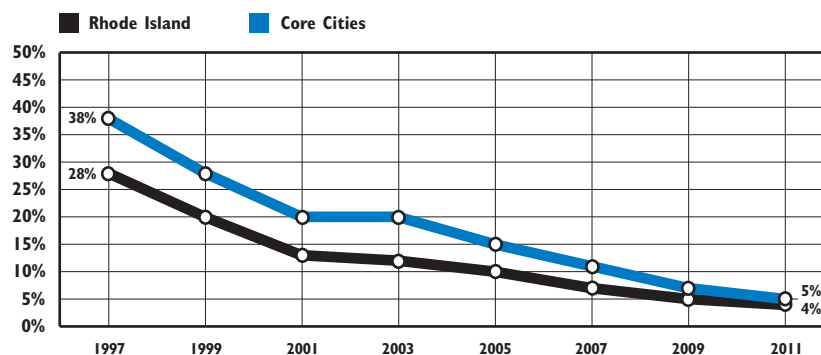
Access to healthy housing (defined as dry, clean, pest-free, ventilated, safe, free of contaminants and well-maintained) is important in preventing lead poisoning.⁸ Children living in homes built before 1978, when lead paint was

banned from interior use in the U.S., are at high risk for lead poisoning.⁹ Although the percentage of children with elevated blood lead levels are declining among all groups nationally, low-income and minority children remain the most likely to be lead poisoned.^{10,11} Children living in Rhode Island's six core cities (where most children who are racial and ethnic minorities live) are at increased risk for lead exposure because the housing stock tends to be older.¹² Nutritional factors may play a role in lead poisoning by affecting the rate of lead absorption.¹³

The U.S. Centers for Disease Control and Prevention has recognized that lead exposure at any level is harmful and recommends a focus on primary prevention of lead exposure.¹⁴ Prevention efforts should target the systematic reduction of lead paint in housing as the key source of lead exposure, through the removal and replacement of building materials that contain lead, professional cleaning and paint stabilization.¹⁵ Every dollar invested in lead paint hazard control is estimated to have a return on investment of \$17-\$221 in reduced health, education and other lifetime costs of childhood lead poisoning.¹⁶

In Rhode Island in 2009, 438 children under age six had confirmed elevated blood lead levels (1.6% of those tested).¹⁷

Children Entering Kindergarten With History of Elevated Blood Lead Level Screening, Rhode Island and Core Cities, 1997 – 2011



Source: Rhode Island Department of Health, Childhood Lead Poisoning Prevention Program, Children entering kindergarten between 1997 and 2011.

- ◆ Elevated blood lead levels have been steadily declining in the core cities and in Rhode Island over the past decade and a half. Of the 436 children entering kindergarten in 2011 who had an initial blood lead screen of ≥ 10 mcg/dL, 23 did not receive a confirmatory second test. Their lead poisoning status is unknown.¹⁸
- ◆ In Rhode Island, a child is considered to be “significantly lead poisoned” if she or he has a single venous blood test result of ≥ 20 mcg/dL or two venous tests ≥ 15 mcg/dL that are at least 90 days but no more than 365 days apart.¹⁹
- ◆ When a child is “significantly lead poisoned,” an inspection of the child’s home is offered. The Rhode Island Department of Health sends certified lead inspectors to determine whether lead hazards are present and, if hazards are found, it works with property owners to make the property lead-safe. In 2009, 65 environmental inspections were offered, of which 48 were performed. Of the 48 inspections performed, 36 are ongoing and in various stages of abatement, seven were parent-owned and therefore the parents’ responsibility to pursue, four were completed, and one was determined not to be a violation. Of the 17 inspections that were offered but not performed, 11 were refused, three were for properties from which the lead poisoned child had moved, one received no response and two are pending.²⁰

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Table 22. Lead Poisoning in Children Entering Kindergarten in the Fall of 2011, Rhode Island

CITY/TOWN	NUMBER TESTED FOR LEAD POISONING	SCREENED WITH BLOOD LEAD LEVEL ≥10 mcg/dL		CONFIRMED WITH BLOOD LEAD LEVEL ≥10 mcg/dL	
		NUMBER	PERCENT	NUMBER	PERCENT
Barrington	160	2	1.3%	1	0.6%
Bristol	222	9	4.1%	1	0.5%
Burrillville	158	3	1.9%	3	1.9%
Central Falls	378	20	5.3%	18	4.8%
Charlestown	82	2	2.4%	1	1.2%
Coventry	325	4	1.2%	4	1.2%
Cranston	815	21	2.6%	16	2.0%
Cumberland	365	3	0.8%	2	0.5%
East Greenwich	148	0	0.0%	0	0.0%
East Providence	539	16	3.0%	5	0.9%
Exeter	46	0	0.0%	0	0.0%
Foster	44	0	0.0%	0	0.0%
Glocester	71	1	1.4%	1	1.4%
Hopkinton	85	3	3.5%	0	0.0%
Jamestown	32	2	6.3%	1	3.1%
Johnston	266	6	2.3%	4	1.5%
Lincoln	189	3	1.6%	1	0.5%
Little Compton	28	5	17.9%	0	0.0%
Middletown	225	5	2.2%	1	0.4%
Narragansett	89	2	2.2%	1	1.1%
New Shoreham	5	0	0.0%	0	0.0%
Newport	340	12	3.5%	4	1.2%
North Kingstown	291	5	1.7%	2	0.7%
North Providence	269	2	0.7%	2	0.7%
North Smithfield	96	1	1.0%	1	1.0%
Pawtucket	1,056	47	4.5%	35	3.3%
Portsmouth	171	2	1.2%	2	1.2%
Providence	2,937	175	6.0%	151	5.1%
Richmond	52	2	3.8%	2	3.8%
Scituate	93	4	4.3%	2	2.2%
Smithfield	155	2	1.3%	2	1.3%
South Kingstown	295	4	1.4%	3	1.0%
Tiverton	135	6	4.4%	0	0.0%
Warren	127	6	4.7%	2	1.6%
Warwick	774	18	2.3%	8	1.0%
West Greenwich	52	0	0.0%	0	0.0%
West Warwick	368	6	1.6%	2	0.5%
Westerly	257	7	2.7%	4	1.6%
Woonsocket	640	30	4.7%	20	3.1%
Unknown Residence	4	0	NA	0	NA
Core Cities	5,719	290	5.1%	230	4.0%
Remainder of State	6,661	146	2.2%	72	1.1%
Rhode Island	12,384	436	3.5%	302	2.4%

Source of Data for Table/Methodology

Rhode Island Department of Health, Childhood Lead Poisoning Prevention Program.

Data for children entering kindergarten in the fall of 2011 reflect the number of Rhode Island children eligible to enter school in the fall of 2011 (i.e., born between 9/1/05 and 8/31/06).

Children who screened positive for lead poisoning (blood lead level ≥10 mcg/dL) are counted if they screened positive with an unconfirmed capillary test at any time in their lives prior to the end of December 2009. Children confirmed positive for lead poisoning (blood lead level ≥10 mcg/dL) are counted if they screened positive with a venous test and/or had a confirmed capillary test at any time in their lives prior to the end of December 2009. The Rhode Island Childhood Lead Poisoning Prevention Program recommends that children under age six with a capillary blood lead level of ≥10 mcg/dL receive a confirmatory venous test.

The denominator is the number of children entering school in the fall of 2011 who were tested for lead poisoning. Screening data are based on the highest lead test result through December 2009. Data include both venous and confirmed capillary tests.

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

See Methodology Section for more information.

References

- ¹¹⁹ *Childhood lead poisoning in Rhode Island: The numbers 2009 Edition*. (2009). Providence, RI: Rhode Island Department of Health, Childhood Lead Poisoning Prevention Program. Data are based on venous tests and confirmed capillary tests only. The highest result (venous or capillary) is used.
- ²⁷ Brown, M. J. (2002). Costs and benefits of enforcing housing policies to prevent childhood lead poisoning. *Medical Decision Making*, 22(6), 482-492.
- ^{34,11} Rischitelli, G., Nygren, P., Bougatsos, C., Freeman, M. & Helfand, M. (2006). Screening for elevated lead levels in childhood and pregnancy: An updated summary of evidence for the U.S. Preventive Services Taskforce. *Pediatrics*, 118, 1867-1895.

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