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, 2007.[1] These data are for children eligible to enter kindergarten in the fall of 2009 (i.e., children born between September 1, 2003 and August 31, 2004).

SIGNIFICANCE

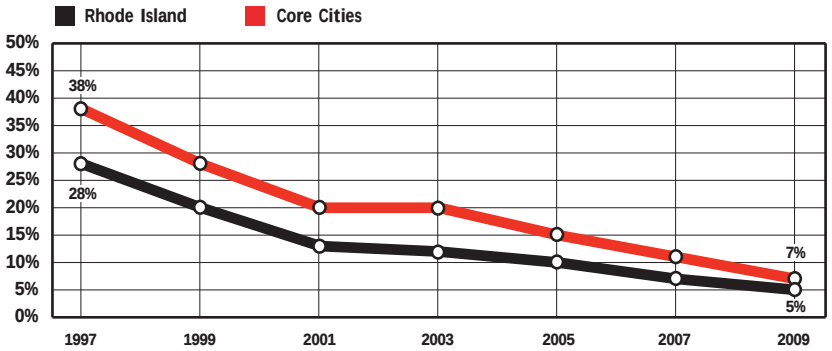
Lead poisoning is a preventable childhood disease.[2] Infants, toddlers and preschool-age children are most susceptible to the toxic effects of lead because they absorb lead more readily than adults.[3] Lead exposure can cause irreversible damage including loss of intelligence, impaired cognitive, motor,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

Access to healthy housing (defined as dry, clean, pest-free, ventilated, safe, free of contaminants and well-maintained) is an important element 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 particularly at risk for lead poisoning.[9,10] Low-income and minority children are more likely to be lead poisoned than their peers.[11] Children living in the 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] Inadequate nutrition, which is more common in low-income children, further increases susceptibility to lead poisoning.[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]

In 2006, Rhode Island had the second highest percentage (among 34 comparable states) of children under the age of 6 with a confirmed elevated blood lead level. In 2006, the rate of lead poisoning for children under age 6 in Rhode Island was 2.4%, compared to 1.2% in the U.S.[16] In Rhode Island in 2007, 614 children under age 6 had confirmed elevated blood lead levels (1.9% of those tested).[17]

Children Entering Kindergarten with History of Elevated Blood Lead Level Screening, Rhode Island and Core Cities, 1997–2009



Source: Rhode Island Department of Health, Childhood Lead Poisoning Prevention Program, Children entering kindergarten between 1997-2009.

◆ **Elevated blood lead levels have been steadily declining in the core cities and in Rhode Island over the past decade. Of the 617 children who will be entering kindergarten in 2009 who had a blood lead screen of ≥10 mcg/dL, 34 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 found, works with property owners to make the property lead-safe. In 2007, 104 environmental inspections were offered, of which 77 were performed. Of the 77 inspections performed, 22 were closed, mostly due to complete lead hazard abatement (12 cases) or parent-ownership of the property (7 cases). Another 55 cases are on-going, with most (49) in various stages of abatement. Of the 27 inspections that were offered but not performed, 12 were refused, 12 were for properties from which the lead poisoned child moved, 2 received no response and 1 is pending.[20]**

Table 20. **Lead Poisoning in Children Entering Kindergarten in the Fall of 2009, 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	222	2	0.9%	1	0.5%
Bristol	203	9	4.4%	6	3.0%
Burrillville	174	9	5.2%	6	3.4%
Central Falls	417	28	6.7%	27	6.5%
Charlestown	88	0	0.0%	0	0.0%
Coventry	366	5	1.4%	4	1.1%
Cranston	831	33	4.0%	24	2.9%
Cumberland	416	6	1.4%	5	1.2%
East Greenwich	164	2	1.2%	2	1.2%
East Providence	552	19	3.4%	7	1.3%
Exeter	61	2	3.3%	1	1.6%
Foster	67	2	3.0%	1	1.5%
Glocester	69	1	1.4%	1	1.4%
Hopkinton	96	7	7.3%	4	4.2%
Jamestown	55	1	1.8%	1	1.8%
Johnston	287	4	1.4%	4	1.4%
Lincoln	217	6	2.8%	5	2.3%
Little Compton	37	4	10.8%	2	5.4%
Middletown	234	2	0.9%	1	0.4%
Narragansett	102	1	1.0%	0	0.0%
New Shoreham	8	0	0.0%	0	0.0%
Newport	367	22	6.0%	9	2.5%
North Kingstown	334	4	1.2%	0	0.0%
North Providence	285	8	2.8%	8	2.8%
North Smithfield	100	5	5.0%	3	3.0%
Pawtucket	1,118	52	4.7%	40	3.6%
Portsmouth	234	6	2.6%	1	0.4%
Providence	3,133	268	8.6%	251	8.0%
Richmond	80	2	2.5%	1	1.3%
Scituate	122	3	2.5%	2	1.6%
Smithfield	146	1	0.7%	1	0.7%
South Kingstown	321	14	4.4%	8	2.5%
Tiverton	160	5	3.1%	0	0.0%
Warren	105	6	5.7%	4	3.8%
Warwick	814	17	2.1%	8	1.0%
West Greenwich	72	0	0.0%	0	0.0%
West Warwick	351	13	3.7%	8	2.3%
Westerly	288	8	2.8%	7	2.4%
Woonsocket	659	40	6.1%	25	3.8%
Unknown Residence	*22*	*0*	*NA*	*0*	*NA*
Core Cities	*6,045*	*423*	*7.0%*	*360*	*6.0%*
Remainder of State	*7,310*	*194*	*2.7%*	*118*	*1.6%*
Rhode Island	*13,377*	*617*	*4.6%*	*478*	*3.6%*

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 2009 reflect the number of Rhode Island children eligible to enter school in the fall of 2009 (i.e. born between 9/1/03 and 8/31/04).

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 2007. 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 tests at any time in their lives prior to the end of December 2007. 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 2009 who were tested for lead poisoning. Screening data are based on the highest lead test result through December 2007. 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

[1,9,19] *Childhood lead poisoning in Rhode Island: The numbers. 2007 Edition.* (2007). 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.

[2,7] Brown, M. J. (2002). Costs and benefits of enforcing housing policies to prevent childhood lead poisoning. *Medical Decision Making*, 22(06), 482-492.

[3,4,11] 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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