

# Childhood Lead Poisoning

## Definition

*Number and rate of screenings* refers to the total number and percent of children under age 6 who were screened for elevated blood lead levels. *Confirmed cases* include the total number of children with blood lead levels greater than or equal to 10 micrograms of lead per deciliter of blood ( $\mu\text{g}/\text{dL}$ ).

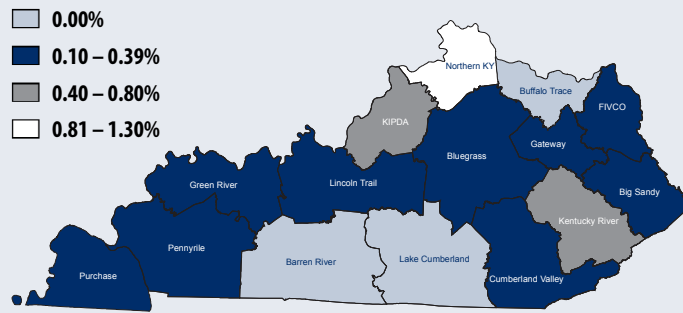
## Data in context

High levels of lead exposure can result in serious health consequences that will follow a child well into adulthood. According to Kentucky's Cabinet for Health and Family Services, a child experiences lead poisoning if two capillary blood tests or one venous blood test for lead returns a result of 20  $\mu\text{g}/\text{dL}$  or higher.<sup>1</sup> However, according to the Centers for Disease Control and Prevention (CDC), a level of 10  $\mu\text{g}/\text{dL}$  or higher is considered a "level of concern."<sup>2</sup> Symptoms associated with lead poisoning include abdominal pain, vomiting, constipation, change in appetite, and irritability.<sup>3</sup>

Young children under the age of six are especially vulnerable to exposure to lead due to the early development of their brains and central nervous system. For young children, even low levels of exposure can result in reduced IQ, learning disabilities, attention deficit disorders, behavioral problems, stunted growth, impaired hearing, and kidney damage.<sup>4</sup> Higher levels of lead exposure may result in mental retardation, a comatose state, or death.<sup>5</sup> Pregnant women with elevated lead levels also face a high risk of lead passing through the placenta and exposing their baby.<sup>6</sup>

A child can be exposed to lead from household sources, such as chips of lead paint, most commonly found in homes built before 1978. Other sources include drinking water passing through contaminated plumbing materials, or soil contaminated from vehicle emissions before leaded gasoline was banned.<sup>7</sup> Poor housing quality and/or pre-1950s housing greatly increases the risks for lead exposure, and low-income and African-American children are disproportionately affected.<sup>8</sup>

## Percent of Tested Children under Age Six with Confirmed Elevated Blood Lead Levels by Area Development District, 2007



Source: Cabinet for Health and Family Services, Department for Public Health.

Immigrant, refugee, and internationally-adopted children also face an elevated risk for lead poisoning due to possible exposure in their native countries or if they continue to use traditional remedies or cosmetics.<sup>9</sup> Health departments can reduce lead exposure by providing language appropriate information regarding the importance of screening and prevention.

In 2006, more than 3.2 million children nationally were tested for elevated blood lead levels, and 1.2 percent had confirmed elevated levels.<sup>10</sup> Comparable Kentucky data show that the confirmed elevated lead levels of tested children under 6 decreased from 0.8 percent in 2005 to 0.5 percent in 2006.<sup>11</sup> However, many low-income children receiving Medicaid who face a higher risk of exposure still do not receive the recommended screenings.<sup>12</sup>

Statewide, the rate of young children screened increased from 8 per 100 in 2000 to 12 per 100 in 2007. Nearly three out of four counties saw an increase in the screening rates between the time periods. Across the state, the number of children with confirmed elevated blood lead levels dropped in half between 2000 and 2007 despite increased screenings.

As part of the Healthy People 2010 initiative, the CDC has set the goal to eliminate childhood lead poisoning as a public health problem by 2010. Key

elements of this strategy include identification and control of lead paint hazards, identification and care for children with elevated blood lead levels, surveillance of elevated blood lead levels in children to monitor progress, and further research to improve childhood lead poisoning prevention methods.<sup>13</sup>

**Data Sources:** Kentucky Cabinet for Health and Family Services, Department for Public Health, Kentucky Childhood Lead Poisoning Prevention Program; and University of Louisville Department of Pharmacology and Toxicology. Number of children in 2000 from the U.S. Decennial Census. Number of children in 2007 from the Kentucky State Data Center.

**Data Note:** Confirmed case refers to a blood lead level greater than or equal to 10  $\mu\text{g}/\text{dL}$  resulting from one venous sample or two capillary samples taken within twelve weeks of one another. The statewide total includes files with missing county information.

**Rate Calculation:** (number of children under age 6 who were screened for an elevated blood lead level in 2000 \* 100) / (total number of children under age 6 in 2000)  
(number of children under age 6 who were screened for an elevated blood lead level in 2007 \* 100) / (total number of children under age 6 in 2007)

- 1 Kentucky Cabinet for Health and Family Services. Department for Public Health website. *What Is Child Lead Poisoning?* Available at <http://chfs.ky.gov>. Accessed August 2008.
- 2 National Safety Council (2004). *Lead Poisoning*. Available at <http://www.nsc.org>. Accessed September 2008.
- 3 Ibid.
- 4 Ibid.
- 5 Ibid.
- 6 Ibid.
- 7 Ibid.
- 8 Brown, M. J. (2008). "Childhood Lead Poisoning Prevention: Getting the Job Done by 2010." (Direct from CDC Environmental Health Services Branch.) *Journal of Environmental Health*, vol. 70, no. 6.
- 9 Centers for Disease Control and Prevention (2001). "Fatal Pediatric Lead Poisoning." *Morbidity and Mortality Weekly Report*, vol. 50, no. 22.
- 10 Centers for Disease Control and Prevention. *CDC Surveillance Data, 1997-2006*. Available at <http://www.cdc.gov>. Accessed August 2008.
- 11 Ibid.
- 12 McCarthy, D., and Leatherman, S. (2006). "Improving Lead Screening for Medicaid-Insured Children." *Performance Snapshots*. The Commonwealth Fund. Available at <http://www.commonwealthfund.org>. Accessed October 2008.
- 13 Centers for Disease Control and Prevention. *Childhood Lead Poisoning Prevention Program*. Available at <http://www.cdc.gov>. Accessed August 2008.

## Lead screenings (number & rate per 100 children under 6) and confirmed cases among children under 6

	2000			2007		
	Screenings Number	Rate	Confirmed cases	Screenings Number	Rate	Confirmed cases
<b>Kentucky</b>	<b>24,327</b>	<b>8</b>	<b>234</b>	<b>40,529</b>	<b>12</b>	<b>109</b>
Adair	164	13	0	152	12	0
Allen	125	9	<6	175	12	0
Anderson	19	1	0	73	5	<6
Ballard	70	12	0	122	21	0
Barren	257	9	0	347	11	0
Bath	82	9	0	184	20	0
Bell	356	16	3	641	31	<6
Boone	155	2	0	268	3	<6
Bourbon	38	3	3	253	18	<6
Boyd	139	4	0	477	14	<6
Boyle	79	4	0	21	1	0
Bracken	45	7	0	109	16	0
Breathitt	76	7	0	34	3	0
Breckinridge	18	1	0	243	17	0
Bullitt	83	2	<6	385	8	0
Butler	16	2	0	68	7	0
Caldwell	206	23	0	101	12	0
Calloway	87	4	<6	250	12	0
Campbell	311	4	10	442	7	12
Carlisle	47	12	<6	86	24	0
Carroll	85	10	0	118	13	<6
Carter	172	8	0	245	12	0
Casey	179	15	0	97	8	0
Christian	55	1	<6	399	4	<6
Clark	36	1	0	67	3	0
Clay	353	21	0	345	22	0
Clinton	193	27	<6	110	15	0
Crittenden	129	21	<6	81	14	<6
Cumberland	101	21	0	102	21	0
Daviess	85	1	0	1,220	15	<6
Edmonson	15	2	0	55	7	0
Elliott	49	9	0	92	19	0
Estill	23	2	0	174	15	<6
Fayette	286	1	<6	461	2	<6
Fleming	235	21	<6	225	20	0
Floyd	625	21	<6	853	27	0
Franklin	76	2	0	313	9	0
Fulton	109	18	<6	212	45	<6
Gallatin	68	9	0	72	9	0
Garrard	16	1	0	95	8	0

	2000			2007		
	Screenings Number	Rate	Confirmed cases	Screenings Number	Rate	Confirmed cases
Grant	413	19	<6	395	17	<6
Graves	190	7	<6	437	15	<6
Grayson	11	1	<6	65	3	<6
Green	130	17	0	92	12	0
Greenup	114	4	<6	102	4	<6
Hancock	16	2	0	108	15	0
Hardin	82	1	<6	845	9	7
Harlan	540	22	<6	609	27	<6
Harrison	90	6	0	247	18	<6
Hart	11	1	0	144	10	0
Henderson	9	0	0	629	17	<6
Henry	109	9	<6	96	8	0
Hickman	53	15	0	79	27	<6
Hopkins	51	1	0	850	25	<6
Jackson	171	16	<6	372	38	0
Jefferson	7,745	14	131	8,495	15	32
Jessamine	<6	*	0	309	8	<6
Johnson	457	27	<6	466	26	0
Kenton	392	3	7	963	7	12
Knott	102	8	0	35	3	0
Knox	346	13	0	415	14	0
LaRue	18	2	0	80	8	0
Laurel	103	2	0	307	7	0
Lawrence	44	4	0	78	7	0
Lee	143	28	0	7	2	0
Leslie	182	20	<6	78	10	0
Letcher	332	19	0	46	3	<6
Lewis	290	26	<6	270	26	0
Lincoln	115	6	<6	67	3	0
Livingston	127	20	<6	138	25	0
Logan	6	0	0	102	5	0
Lyon	97	26	0	46	13	0
McCracken	169	3	<6	830	17	0
McCreary	265	19	<6	175	13	0
McLean	20	3	0	141	20	0
Madison	59	1	<6	582	9	<6
Magoffin	266	24	<6	383	37	0
Marion	141	10	<6	211	13	0
Marshall	338	18	<6	161	8	0
Martin	334	31	<6	221	25	0
Mason	12	1	0	134	11	0

	2000			2007		
	Screenings Number	Rate	Confirmed cases	Screenings Number	Rate	Confirmed cases
Meade	12	0	0	130	8	0
Menifee	92	20	<6	184	42	0
Mercer	92	6	0	123	8	0
Metcalfe	18	2	0	90	11	0
Monroe	150	17	<6	179	21	0
Montgomery	41	2	0	446	21	<6
Morgan	83	9	<6	244	27	0
Muhlenberg	17	1	0	105	5	0
Nelson	75	2	<6	277	8	0
Nicholas	16	3	0	62	11	0
Ohio	16	1	0	393	21	0
Oldham	116	3	<6	237	6	0
Owen	20	3	0	93	11	0
Owsley	43	12	0	7	2	0
Pendleton	28	2	0	39	4	<6
Perry	494	24	<6	128	5	0
Pike	755	15	<6	1,104	25	<6
Powell	147	14	0	270	24	0
Pulaski	742	19	6	283	6	0
Robertson	23	17	0	36	27	0
Rockcastle	<6	*	0	241	20	0
Rowan	22	2	0	283	19	0
Russell	219	20	<6	123	10	0
Scott	21	1	0	127	3	<6
Shelby	111	4	<6	121	3	<6
Simpson	7	0	0	93	7	0
Spencer	46	4	0	58	4	0
Taylor	250	15	0	130	8	0
Todd	83	8	0	186	17	0
Trigg	166	19	<6	107	12	0
Trimble	42	6	0	64	9	0
Union	27	2	0	248	24	<6
Warren	301	4	<6	540	6	0
Washington	12	2	0	100	12	0
Wayne	337	21	0	143	10	0
Webster	<6	*	0	312	28	<6
Whitley	118	4	0	255	9	<6
Wolfe	208	36	0	38	6	<6
Woodford	21	1	0	63	3	0

\* Rates were not calculated for counties with fewer than 6 occurrences.