

Lead - Elevated Blood Levels in Children

Agent: Lead (metal)

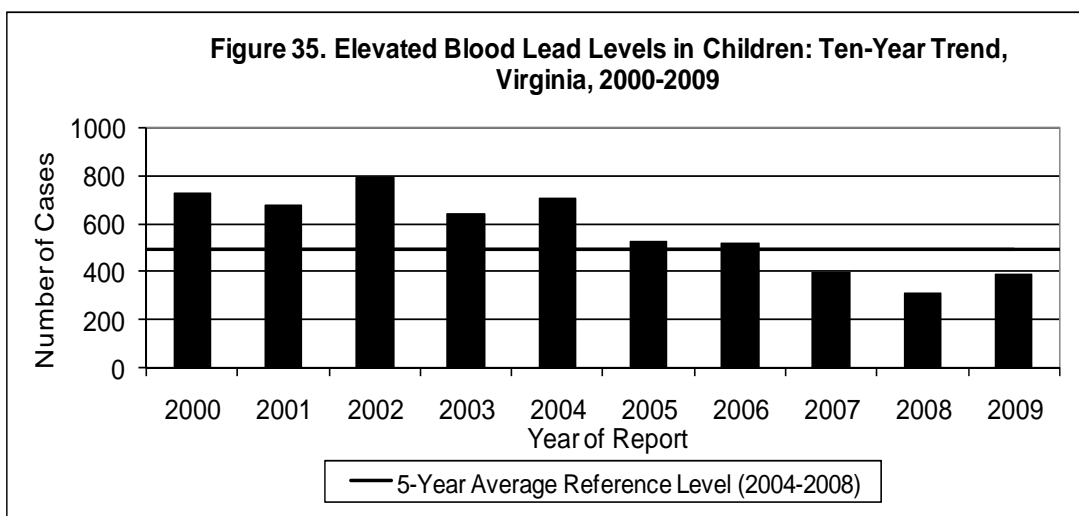
Mode of Transmission: Chewing objects painted with lead paint; ingestion of contaminated dust, soil or water; or using glassware, healthcare products or folk remedies containing lead.

Signs/Symptoms: Even at low levels, lead in children can cause nervous system damage, learning disabilities, behavior problems, muscle weakness, decreased growth, hearing damage, or anemia.

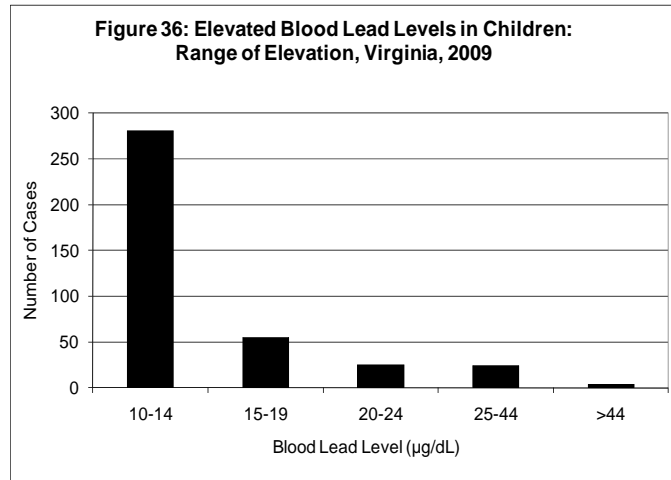
Prevention: Ingestion of lead-contaminated materials and use of lead-containing objects should be avoided. Education of healthcare professionals and parents is important in reducing and detecting lead exposure.

Other Important Information: The primary source of lead for children is exposure to deteriorated paint in housing built before 1978. There is an increased awareness of new sources of lead exposures, including improper renovation of older homes; imported toys manufactured with lead paints or components; candies popular among some ethnic groups; traditional Hispanic, Indian, and Middle Eastern folk remedies; and ceramics from foreign countries which use lead glazes.

Elevated blood lead levels of ≥ 10 micrograms per deciliter ($\mu\text{g/dL}$) are reportable in children aged 15 years or younger. In 2009, there were 389 newly reported cases of elevated blood levels in children. This is a 21% increase from the 307 cases reported in 2008, but a 20% decrease from the five-year average of 489.2 cases per year (Figure 35). Although the overall number of reported cases has declined since 2002, the lower figures are partially a result of better data quality and less ambiguity in the case status for surveillance purposes. The improved reporting of specimen type (e.g., capillary or venous) by physicians and laboratories has enhanced the ability to interpret test findings and has resulted in more accurate information on the number of children with confirmed elevated blood lead levels and the ruling out of unknown case status.



Blood lead levels in the 10-14 $\mu\text{g}/\text{dL}$ range are above normal, but only require lead awareness education and follow-up monitoring. Blood lead levels in the 15-19 $\mu\text{g}/\text{dL}$ range require nutritional and environmental education, as well as more frequent testing to ascertain if the blood lead level is increasing. Blood lead levels greater than 20 $\mu\text{g}/\text{dL}$ require greater degrees of case management, the initiation of an environmental investigation to



to identify and eliminate lead hazards, and the possibility of medical intervention. Among the 389 reported cases of elevated blood lead levels in children in 2009, 281 (72%) involved blood lead levels in the 10-14 $\mu\text{g}/\text{dL}$ range, 55 (14%) involved levels in the 15-19 $\mu\text{g}/\text{dL}$ range, 25 (6%) involved levels in the 20-24 $\mu\text{g}/\text{dL}$ range, 24 (6%) involved levels in the 25-44 $\mu\text{g}/\text{dL}$ range, and 4 (1%) involved levels above 44 $\mu\text{g}/\text{dL}$ (Figure 36).

By age, the majority (90%) of elevated blood lead levels and the highest incidence rate occurred in those aged 1-9 years (349 cases, 38.1 per 100,000). Infants (28.7 per 100,000) and 10-15 year olds (1.7 per 100,000) had the second and third highest incidence rates, respectively. Fifty-one percent of reports were missing race data. Among reports with race information, the black population had an incidence rate five times that of the white population (30.4 versus 6.0 per 100,000, respectively), while the “other” population had an incidence rate of 8.8 per 100,000. The male population had a higher incidence rate than the female population (25.8 and 22.1 per 100,000, respectively). By region, the central region had the highest incidence rate of elevated blood lead levels in children with 45.8 per 100,000. This was followed by the southwest, northwest and eastern regions, with incidence rates ranging from 21.3 to 25.7 per 100,000. The northern region had the lowest rate, at 13.3 per 100,000.