# Childhood Lead Poisoning FAQ's for Providers

Lead exposure can cause serious damage to children's developing brain. Children and pregnant women are especially vulnerable to lead exposure. Physicians play a key role in prevention by providing anticipatory guidance to families early in infancy before lead exposure occurs. Recent studies have demonstrated proportionately greater damage from low level lead exposure than from higher levels.

## How much lead is safe?

There is no safe level of lead exposure in children. Decreases in cognition have been documented in children with levels as low as 5 micrograms per deciliter of lead in blood. CDC recommends evaluation and intervention at levels of 5µg/dl.

## How are children exposed to lead?

Lead has been removed from gasoline and residential paint reducing exposure in children. The risk of exposure today is primarily from older homes built before 1978; through household dust, chipping paint, soil surrounding houses painted with lead paint, and less commonly from water contaminated from old pipes containing lead solder. Some imported toys, candy, old (before 1990) or imported ceramic dishes, folk remedies, old vinyl mini-blinds and imported aluminum cans with soldered seams can contain lead. Lead is primarily ingested through normal hand to mouth activity in young children.

## What are the sign and symptoms of lead poisoning?

Most children are asymptomatic. Non-specific symptoms include: headache, abdominal pain, loss of appetite or constipation. Clumsiness, agitation or decreased activity and drowsiness may be signs showing CNS involvement which rapidly can progress to vomiting, stupor and convulsions. Lead toxicity must be treated as an emergency.

## How does lead cause damage?

Lead alters the basic nervous system functions, like calcium-modulated signaling at very low concentrations. At 2 years, when lead levels would peak, also a time when major reductions in dendrite connections occurs, among other events very crucial to development. It is possible that lead exposure at this time interferes with a critical development process in the CNS, not yet specifically known how. Imaging studies of adults who had elevated blood lead levels in childhood demonstrated region-specific reductions in the brain's volume and alterations in its microstructure, as well as significant impact on brain reorganization. Elevated bone lead levels were associated with increased attention dysfunction, aggression and delinquency.

Lead also has non-neurodevelopmental effects. Lead damages the kidney and children exposed to lead are at greater risk to become hypertensive adults. Lead interferes with the body's ability to use vital nutrients, iron and vitamin D with exposure resulting in delayed growth.

## What are testing recommendations?

Physicians should conduct a thorough risk assessment and if indicated screen children at age one **and** two years of age or once after age 2 if the child has never previously been screened per CDC recommendations. Elevated levels of 5µg/dl and higher require follow up and parental education to assure no further exposure exists. Levels above 15 - 19 µg/dl persistently and 20µg/dl and higher require environmental remediation. For more information contact:

## What are the Pennsylvania reporting requirements for elevated lead?

Pennsylvania state law requires that both in-state and out-of-state clinical laboratories analyzing blood for lead must report elevated levels to the Pennsylvania Department of Health (PADOH). All laboratories analyzing blood for lead must be licensed and approved by the Commonwealth.

For persons under sixteen (16) years of age and pregnant females, the state law requires clinical laboratories to report all blood lead test results to the PADOH's Childhood Lead Poisoning Prevention Program, Division of Child and Adult Health Services, Bureau of Family Health.

For adults, defined as persons sixteen (16) years of age or older, the state law requires clinical laboratories to report all blood lead level test results to the PADOH's Division of Environmental Health Epidemiology, Bureau of Epidemiology. An elevated BLL for an adult is currently 10 µg/dL or more.

Bethlehem Health Bureau

askbhb@bethlehem-pa.gov

610-865-7083

Sources: CDC, AAP