CALIFORNIA DEPARTMENT OF HEALTH CARE SERVICES
Michelle Baass | Director

BLOOD LEAD TESTING AND ANTICIPATORY GUIDANCE

Rationale

No level of lead (Pb) in the body is recognized as safe. Lead toxicity is associated with impaired cognitive, motor, behavioral, and physical abilities. In 2021, the Centers for Disease Control and Prevention (CDC) lowered the blood lead reference value (BLRV) to 3.5 micrograms per deciliter (mcg/dL) to identify children with blood lead levels (BLLs) that are higher than most children's levels. The BLRV is the level at which health care providers are recommended to provide retesting and follow-up. This level is based on the 97.5th percentile of the blood lead values among U.S. children ages one to five years from 2015-2016 and 2017-2018 National Health and Nutrition Examination Survey (NHANES) cycles. Children with BLLs at or above the BLRV represent those at the top 2.5% with the highest BLLs.[1]

For levels other than 3.5 mcg/dL, the CDC uses whole integers. The Childhood Lead Poisoning Prevention Branch (CLPPB) of the California Department of Public Health (CDPH) rounds BLLs to the closest whole integer (10 includes 9.5 mcg/dL, 15 includes 14.5 mcg/dL, etc.).

Lead is a common environmental contaminant present in all areas of the United States, and all children are at risk for lead's toxic effects. Within the United States approximately half a million children ages one to five years have BLLs greater than five mcg/dL.[2] Lead exposure is one of the most common and preventable environmental diseases among California children.

Many common items are associated with lead poisoning, either as the primary source or as part of the child's cumulative exposure. Some of these have received a good deal of public attention. However, exposure to deteriorated lead-based paint and lead-contaminated dust and soil remain major causes of childhood lead poisoning in California.

1 Centers for Disease Control and Prevention, Update of the Blood Lead Reference Value — United States, 2021
2 Centers for Disease Control and Prevention Blood Lead Levels in Children Aged 1-5 Years — United States, 1999–2010.

Drinking water can contain lead, although it has not been found to be a major source of lead exposure in California. Other sources of lead include occupational and "take-home exposure." Workers (including teens) can be exposed on the job and can bring lead home on their skin, hair, clothes, shoes, and vehicles. Lead can readily pass to the fetus in utero, and to a lesser extent, through breast milk.

High levels of lead have been found in many consumer products. It is the primary component of leaded fishing sinkers and bullets. Lead has been found in: jewelry; toys; water dispensers; old, handmade, or imported pottery; imported food, including fried grasshoppers (chapulines); turmeric and other spices; and vinyl, especially if deteriorated. Lead has also been found in: traditional remedies; Chinese and ayurvedic medicines; and substances applied to the skin (such as surma, kohl, and sindoor) for cosmetic, religious, or cultural reasons.

All children who receive services through publicly funded programs for low-income children, as well as children living or spending a lot of time in a place built before 1978 with deteriorated paint or recent renovation, are deemed to be at high risk of lead poisoning and, under California regulations, must be blood lead tested at one and two years of age.[3] Refugees and other children who have lived in or spent time in another country may also be at increased risk.[4] Although all children are at risk for lead exposure, poor and minority children are disproportionately affected. Lead exposure is at once a by-product of poverty and a contributor to the cycle that perpetuates and exacerbates the state of being poor.[5]

The only way to know if a child is lead poisoned is to obtain a BLL. Young children from six months to six years (particularly those at one and two years) are at greatest risk.

Under California regulations[6] providers must give anticipatory guidance on lead poisoning prevention at each periodic health assessment from the age of six months up to 72 months. California statute[7] requires that health care providers inform parents and guardians about the risks and effects of childhood lead exposure, the requirement that children enrolled in Medi-Cal receive blood lead tests, and the requirement that children not enrolled in Medi-Cal who are at high risk of lead exposure receive blood lead tests. The provider must order BLLs at the ages of one and two years and whenever a child under six years is identified as having missed the required tests, a change in circumstances has put the child at risk, or if requested by the parent or guardian and medically indicated. Refugees must be screened upon arrival and at specified times thereafter.[8]

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3 California Code of Regulations, Title 17, §§ 37000-37100
4 Centers for Disease Control and Prevention, Lead Guidelinesl
5 Centers for Disease Control and Prevention, Childhood Lead Poisoning Prevention Program,
6 California Code of Regulations, Title 17, §§ 37000-37100,
7 California Health and Safety Code §§105285-105286,
8 Centers for Disease Control and Prevention, Lead Guidelines,

Once a child has become exposed to lead, it is crucial to identify and remove the sources of exposure. CLPPB and its contracted local programs can help identify lead sources and collaborate in a treatment response, as well as provide educational materials and technical knowledge. There is a Childhood Lead Poisoning Prevention Program (CLPPP) in most counties and some cities. The local programs (or the CLPPB in counties without a local CLPPP) offer a range of supportive interventions for the family of a child up to the age of 21 years. For children with BLLs meeting eligibility criteria, these also include home visits by a Public Health Nurse (PHN) and investigations by an environmental professional. There is no charge to the family for these services; and eligibility is based on BLLs, not income or insurance status.

Screening Requirements

The following requirements apply to every primary health care provider in California (medical doctor or mid-level practitioner), whether in a public program or private practice:

- At each periodic health assessment from the time the child begins to crawl or six months of age, whichever is sooner, until 72 months of age, provide oral or written anticipatory guidance to a parent or guardian of the child. This should include at a minimum the information that children can be harmed by exposure to lead, especially deteriorating or disturbed lead-based paint and the dust from it, and that children are particularly at risk of lead poisoning. Health care providers are required to inform parents and guardians about the risks and effects of childhood lead exposure, the requirement that children enrolled in Medi-Cal receive blood lead tests and the requirement that children not enrolled in Medi-Cal who are at high risk of lead exposure receive blood lead tests.[9]
- Order BLLs at both 12 and 24 months of age or at any time up to age 72 months if not done at the specified ages if:
    - If the child receives services from a publicly funded program for low-income children, such as Medi-Cal. These children are deemed to be at risk of lead poisoning.
        - If a blood lead test was not performed at 12 months of age, catch-up BLL testing is mandated between 12 and 24 months of age.
        - If a blood lead test was not performed at 24 months of age or later, catch-up BLL testing is mandated for children between 24 and 72 months of age.
    - If the child does not receive services from a publicly funded program for low- income children, but a parent or guardian answers “yes” or “don’t know” to the question:

9 California Health and Safety Code, California Health and Safety Code, §§105285-105286

    - "Does your child live in, or spend a lot of time in, a place built before 1978 that has peeling or chipped paint or that has been recently renovated?"
        - The question is a minimum, based on the prevalence of lead in pre-1978 housing, which is the date lead was markedly restricted in residential paint. Other sources should be explored, as well.
        - If an assessment was not performed at 12 months of age, an assessment (followed by a blood lead test, if found to be at risk) is mandated for children between 12 and 24 months of age.
        - If an assessment was not performed at 24 months of age or later, an assessment (followed by a blood lead test, if found to be at risk) is mandated for children between 24 and 72 months of age
    - Any time a change in circumstances has put the child at risk.
- Other indications for a blood lead test that are not in regulations should also be considered:
    - Parental request
    - Sibling, playmate or other close contact with an increased BLL
    - Suspected lead exposure (see California Standard of Care and Sources of Lead)[10]
    - History of living in or visiting a country with high levels of environmental lead

Additional Screening Requirements for Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) and Head Start Program

Head Start programs must comply with California regulations[11] and the EPSDT requirements for lead screening.[12]

- The Centers for Medicare and Medicaid (CMS) require that all children eligible for Medicaid (Medi-Cal) receive a screening blood lead test at both 12 months and 24 months of age.

10 California Department of Public Health Standard of Care Guidelines on Childhood Lead Poisoning for California Health Care Providers
11 California Code of Regulations, Title 17, §§ 37000-37100
12 42 Code of Federal Regulations, §441.50 and §§ 441.55 – 441.60,

- Children between the ages of 36 to 72 months must also have a screening blood lead test if a lead toxicity screening has not been previously conducted.

For cases where a blood "finger stick" test result is equal to or greater than 3.5 mcg/dL, the result must be confirmed through a venous blood draw analyzed by a reference laboratory that runs inductively coupled plasma mass spectrometry (ICP-MS) or graphite furnace atomic absorption spectrometry (GFAAS). Venous samples should not be analyzed using a point-of-care testing device. Filter paper blood lead testing is not accepted by the State of California. If filter paper testing is currently used for blood lead tests, please discontinue its use. If filter paper has been used in the past to test children under the age of six, and the test result was less than 3.5 mcg/dL, the test should be repeated with another screening using EITHER capillary blood and a Food and Drug Administration (FDA)-approved point-of-care testing device OR capillary or venous blood sent to a lab. If the filter paper result was equal to or greater than 3.5 mcg/dL, repeat with a venous test and send the blood sample for analysis to a reference lab that runs ICP- MS or GFAAS.

CDC Recommendations for Post-Arrival Lead Screening of Refugees[13]

- Check the BLL of all refugee infants and children ≤16 years of age at the domestic medical screening visit following their arrival in the United States. Adolescent refugees >16 years of age should be tested if there is a high index of suspicion (e.g., sibling with BLL at or above 3.5 mcg/dL, environmental exposure risk factors), if there are clinical signs or symptoms of lead exposure, or if pregnant or lactating.
- Within three to six months after initial testing, a blood lead test should be repeated for all refugee infants and children ≤ six years of age, regardless of initial screening BLL result.
- Repeat testing is also recommended for refugee children and adolescents seven to 16 years of age who had BLLs ≥ 3.5 mcg/dL at initial screening or for any child older than seven years of age who has a risk factor (e.g., sibling with BLL at or above 3.5 mcg/dL, environmental exposure risk factors) regardless of initial test result.
- For pregnant or lactating adolescents who had BLLs at or above 3.5 mcg/dL at initial screening.
- Malnourished children may also be at an increased risk for harm from lead exposure if their BLLs are at or above the BLRV of 3.5 mcg/dL, likely through

13 Centers for Disease Control and Prevention, Lead Guidelines

increased intestinal lead absorption mediated by micronutrient deficiencies such as iron, calcium, or zinc.

- All newly arrived pregnant or breastfeeding women should be prescribed a prenatal or multivitamin with adequate iron and calcium. Referral to a healthcare provider with expertise in high-risk lead exposure treatment and management may be indicated for elevated BLLs.

Blood Lead Testing

The type of draw for a BLL is crucial and should be specified on the requisition and report (as well as the child's name, address, telephone, birthdate, sex, race and ethnicity, pregnancy status, employment information if applicable, and the provider's contact information). Both venous and capillary blood samples are acceptable for initial lead screening. Arterial or umbilical line specimens are as reliable as venous ones and may be used whenever a reference is made to a "venous" specimen. Use of a heel stick instead of a finger stick to obtain a capillary specimen is recommended in children under one year of age. Filter paper blood lead testing is not accepted by the State of California. If filter paper testing is currently being used for blood lead tests, please discontinue its use. If filter paper has been used in the past to test children under the age of six, and the test result was less than 3.5 mcg/dL, the test should be repeated with another screening using EITHER capillary blood and an FDA-approved point-of-care testing device OR capillary or venous blood sent to a lab. If the filter paper result was equal to or greater than 3.5 mcg/dL, repeat with a venous test and send the blood sample for analysis to a reference lab that runs ICP-MS or GFAAS.

Particular care must be taken to prevent sample contamination when taking a capillary sample. Venous blood specimens are less likely to be contaminated by ambient lead and should be used for all testing done to confirm or follow up a BLL. Every child with a screening BLL equal to or greater than the CDC reference level of 3.5 mcg/dL needs additional follow up, including a venous specimen analyzed by a reference laboratory that runs inductively coupled plasma mass spectrometry (ICP-MS) or graphite furnace atomic absorption spectrometry (GFAAS). Venous samples should not be analyzed using a point-of-care testing device.

California requires all laboratories report the results of all blood lead analyses they perform on specimens drawn in California to the CLPPB.[14]

14 California Health and Safety Code, § 124130

Health care providers using a point-of-care testing device are considered laboratories and must report test results via the Electronic Blood Lead Reporting system: Report Results.[15]

Health care providers not using a point-of-care testing device are not required to report but are welcome to contact CLPPB with questions.

Bright Futures

Additional information on lead risk assessment and testing can be found at Bright Futures/American Academy of Pediatrics (AAP) Recommendations for Preventive Pediatric Health Care.*[16]

Please Note: California regulations and guidance, which are more protective on lead testing, should be followed when there is discrepancy with recommendations in Bright Futures.

Considerations for Referral Treatment and/or Follow-Up

Evaluate blood lead laboratory test results and assess clinical conditions which may be associated with elevated blood lead including, but not limited to, iron deficiency, anemia, developmental delay, unexplained seizures or neurologic symptoms, abdominal pain, behavioral problems, hearing loss, and learning deficits.

Retest and refer for medical care management of children with elevated BLLs as outlined in Table 1.

Provide appropriate nutritional guidance as the co-existence of iron, zinc, or calcium deficiencies may enhance the uptake of lead from the gastrointestinal tract. Infants and children who are well nourished and eat frequently absorb less lead. Refer children less than five years of age to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)[17] for supplemental foods and nutritional counseling and education. Consider referring children with BLLs equal to or greater than 20 mcg/dL to California Children's Services (CCS)[18] for authorization of services, such as nutritional assessment, education, and other interventions, as part of their treatment plan.

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15 California Department of Public Health Electronic Blood Lead Reporting system: Report Results,
16 Recommendations for Preventive Pediatric Health Care
*American Academy of Pediatrics (AAP) materials linked to with permission for reference only. Use of these materials beyond the scope of these guidelines must be reviewed and approved by the AAP, who can be reached at marketing@aap.org.
17 Special Supplemental Nutrition Program for Women, Infants, and Children (WIC),
18 California Children's Services Homepage

Refer Medi-Cal eligible children who are not eligible for CCS to the local Medi-Cal Field Office to obtain authorization for medical nutritional therapy services.

Resources

California Childhood Lead Poisoning Prevention Branch
850 Marina Bay Parkway, Building P, 3rd Floor, Richmond, CA 94804-6403
(510) 620-5600

Centers for Disease Control and Prevention (CDC)
(800) 232-4636

Agency for Toxic Substances and Disease Registry (ATSDR), Toxicological Profile for Lead

Blood Lead Levels in Children Fact Sheet

Report of the Advisory Committee on Childhood Lead Poisoning Prevention, January 4, 2012

Response to the Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in "Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention"

Guidelines for the Identification and Management of Lead Exposure in Pregnant and Lactating Women

Advisory Committee on Childhood Lead Poisoning Prevention, Guidelines for Measuring Lead in Blood Using Point of Care Instruments

Head Start, Early Childhood Learning and Knowledge Center

Pediatric Environmental Health Specialty Unit Network (PEHSU)
(844) 734-7899

Poison Control Center (PCC)
(800) 222-1222

U.S. Environmental Protection Agency
(800) 424-5323

Pediatric Environmental Health, 4th edition. American Academy of Pediatrics, 2018
pgs. 557-584

American Academy of Pediatrics, Council on Environmental Health, Policy Statement, Prevention of Childhood Lead Toxicity, July 01, 2016

Table 1: Recommendations on Medical Management of Childhood Lead Exposure

No level of lead in the blood is known to be safe. The US Centers for Disease Control and Prevention (CDC) established in 2021 a new reference value of 3.5 micrograms per deciliter (mcg/dL) for blood lead levels (BLLs), thereby lowering the level at which evaluation and intervention are recommended.[1]

Contact the California Department of Public Health, Childhood Lead Poisoning Prevention Branch (CLPPB), (510) 620-5600, for additional information about childhood lead toxicity.

1 Centers for Disease Control and Prevention. Blood Lead Reference Value

BLL[2] < 3.5 mcg/dL	EVALUATION AND TESTING	MANAGEMENT
Screening BLLs may be either a capillary (CBLL) or a venous (VBLL).[3],[4] Filter paper blood lead tests are not accepted by the State of California. **Retest for identified risk must be venous**[3] If VBLL increases to higher range, retest and manage per that range.	**General** • Perform routine history and assessment of physical and mental development. • Assess nutrition and risk for iron deficiency. • Consider lead exposure risks. **Blood Lead Levels** California regulations require testing at ages 12 months and 24 months (up to 72 months if not tested at 24 months) if child is in a publicly funded program for low-income children, spends time	Comply with California statutes and regulations mandating a standard of care under which the health care provider, at each periodic health care visit from age 6 to 72 months, must give oral or written anticipatory guidance to a parent or guardian including at a minimum that children can be harmed by lead, are particularly at risk from the time they crawl until 72 months old, and can be harmed by deteriorating or disturbed paint and lead-contaminated dust, and that children enrolled in Medi-Cal receive blood lead tests, and children not enrolled in Medi-Cal who are at high risk of lead exposure

2 For levels other than 3.5 mcg/dL, the CDC uses whole integers. California rounds BLLs to the closest whole integer (10 includes 9.5 mcg/dL, 15 includes 14.5 mcg/dL, etc.).
3 Capillary lead specimens are easily contaminated. They are acceptable for screening but all retests on BLLs ≥ 3.5mcg/dL should be venous. Consider arterial or umbilical cord specimens as if venous. A heel stick may be used to obtain a capillary specimen in children under one year. LeadCare® analyzers should not be used for VBLLs. Information on Magellan LeadCare: 2021 Blood Lead Test Kit Recall and 2017 FDA Safety Communications, and Recommendations
4 Analyzing laboratories must report results of all BLLs drawn in California. California Health and Safety Code, section 124130

BLL[2] < 3.5 mcg/dL	EVALUATION AND TESTING	MANAGEMENT
	at a pre-1978 place with deteriorated paint or recently renovated, or has other lead exposure risks.[5] • If screened early (before 12 months), retest in 3-6 months as risk increases with increased mobility. • Test anyone birth to 21 years when indicated by changed circumstances, identification of new risks, or at the request of a parent or guardian. • Follow-up with VBLL in 6-12 months if indicated. See federal guidelines for Head Start [6] or refugees.[7]	receive blood lead tests.[5] Discuss hand to mouth activity, pica, hand washing, and sources of lead such as lead-contaminated paint, dust, and soil (particularly near busy roads), plumbing, bullets, fishing sinkers; and also lead contaminated remedies, cosmetics, foods, spices, tableware, cookware, batteries, jewelry, toys and other consumer products, a household member's lead-related work or hobbies, recent time spent in another country. • Discuss BLLs with family. Counsel on any risk factors identified. • Encourage good nutrition, especially iron, vitamin C, and calcium. Consider referral to the Supplemental Nutrition Program for Women, Infants, and Children (WIC). • Encourage participation in early enrichment programs and activities. **Chelation is not recommended in this BLL range.**

5 California Code of Regulations, Title 17, sections 37000-37100, sections Title 17, sections 105285-105286,
6 Head Start | Early Childhood Learning & Knowledge Center (ECLKC),
7 Screening for Lead during the Domestic Medical Examination for Newly Arrived Refugees

BLL[2] 3.5-9.4 mcg/dL	EVALUATION AND TESTING	MANAGEMENT
Screening BLLs may be capillary or venous **Every retest must be venous[3]** If VBLL increases to higher range, retest and manage per that range.	**General – Evaluate as above AND** • Take an environmental history to identify potential sources of exposure and provide preliminary advice on reducing/eliminating them. • Test for iron sufficiency (CBC, Ferritin, and CRP).[8] • Perform structured developmental screening evaluations at periodic health visits as lead effects may manifest over years. • Evaluate risk to other children and pregnant and lactating women in the home. **Blood Lead Levels** • If initial BLL is capillary, obtain confirmatory venous test within 3 months. Retest based on range of confirmatory venous test. • For venous result in this range, obtain 2-4 follow up VBLLs	**Manage as above AND** • Counsel on nutrition, iron, vitamin C, and calcium. Encourage taking high-iron and high-vitamin C foods together. Refer to WIC. • Treat iron insufficiency per AAP guidelines. Consider starting a multivitamin with iron. • Add notation of elevated BLL to child's medical record for future neurodevelopmental monitoring. • Refer to an early enrichment program, e.g. Early Start or Head Start. • Consider medical referral and testing for other children and pregnant and lactating women in the home. Coordinate with local Childhood Lead Poisoning Prevention Program (CLPPP) or state CLPPB for outreach, education, and other services. See www.cdph.ca.gov/programs/CLPPB for state and local contact information

8 Diagnosis and Prevention of Iron Deficiency and Iron-Deficiency Anemia in Infants and Young Children (0–3 Years of Age),

BLL[2] 3.5-9.4 mcg/dL	EVALUATION AND TESTING	MANAGEMENT
	• First venous retest within 3 months • Then 1-3 subsequent venous retests every 3 months • After VBLL declining, retest with VBLLs every 6-9 months and thereafter based on VBLL trend.	• **Chelation is not recommended in this BLL range.**

BLL[2] 9.5-14.4 mcg/dL	EVALUATION AND TESTING	MANAGEMENT
Screening BLLs may be capillary or venous **Every retest must be venous[3]** If VBLL increases to higher range, retest and manage per that range.	**General – Evaluate as above** **Blood Lead Levels** • If initial BLL is capillary, obtain confirmatory venous test within 1 month. Retest based on range of confirmatory venous test. • For venous result in this range, obtain 2-4 follow up VBLLs • First venous retest within 1-3 months • Then 1-3 subsequent venous retests every 1-3 months • After VBLL declining, retest with VBLLs every 3-6 months and thereafter based on VBLL trend. • To determine eligibility for full public health case management, a follow-up venous test in this range is needed (eligible if persistent in or above this range).	**Manage as above AND** • If BLL is persistent in or above this range with at least the second test being venous, contact the local CLPPP (or, if no local program, the state CLPPB) for full case management services (nurse case management, environmental investigation, and recommendations for remediation of lead sources), provided at no cost to the family, for children aged birth to 21 years. • The state CLPPB is available for further consultation: (510) 620-5600. See footnote for other lead-knowledgeable agencies. [9] • **Chelation is not recommended in this BLL range**.

9 Pediatric Environmental Health Specialty Unit Network and Centers for Disease Control and Prevention, (800) 232-4636

BLL[2] 14.5-19.4 mcg/dL	**EVALUATION AND TESTING**	**MANAGEMENT**
Screening BLLs may be capillary or venous **Every retest must be venous[3]** If VBLL increases to higher range, retest and manage per that range.	**General – Evaluate as above AND** • Consider abdominal X-ray if suspected ingestion of leaded materials or history of pica/excessive mouthing. **Blood Lead Levels** • If initial BLL is capillary, obtain confirmatory venous test within 1 month. Retest based on range of confirmatory venous test. • For venous result in this range, obtain 2-4 follow up VBLLs • First venous retest within 1-3 months • Then 1-3 subsequent venous retests every 1-3 months • After VBLL declining, retest with VBLLs every 3-6 months and thereafter based on VBLL trend.	**Manage as above AND** • Consider gut decontamination if foreign bodies consistent with lead are visualized on X-ray. • If a single VBLL in this range, contact the local CLPPP (or, if no local program, the state CLPPB) for full case management services for children aged birth to 21 years or for questions about clinical management of BLLs in this range. • Any treatment of BLLs in this range should be provided in consultation with the state CLPPB: (510) 620-5600. See footnote 8 for other lead-knowledgeable agencies. **Chelation is not recommended in this BLL range.**

BLL[2] 19.5-44.4 mcg/dL	EVALUATION AND TESTING	MANAGEMENT
Screening BLLs may be capillary or venous **Every retest must be venous[3]** If VBLL increases to higher range, retest and manage per that range.	**General – Evaluate as above** Consider abdominal X-ray to check for lead-based paint chips and other radiopaque foreign bodies. **Blood Lead Levels** • If initial BLL is capillary, obtain confirmatory venous test within 2 weeks. Retest based on range of confirmatory venous test. • For venous result in this range, obtain 2-4 follow up VBLLs • First venous retest within 1-4 weeks to be sure BLL is not rising (the higher the BLL, the sooner the retest). • Then 1-3 subsequent venous retests every 2-4 weeks • After VBLL declining, retest with VBLLs every 1-3 months and thereafter based on VBLL trend.	**Manage as above AND** • Consider referral to California Children Services (CCS). Requires confirmed VBLL equal to or greater than 20 mcg/dL. [10] • Consider referral for medical nutrition therapy [11] **Chelation is not typically initiated in this BLL range.**

10 Overview of CCS Medical Eligibility; California Code of Regulations, Title 22, section 41518.9 (h),
11 Academy of Nutrition and Dietetics, eat right PRO, MNT Versus Nutrition Education

BLL[2] 44.5-69.4 mcg/dL	**EVALUATION AND TESTING**	**MANAGEMENT**
Screening BLLs may be capillary or venous **Every retest must be venous[3]** If VBLL increases to higher range, retest and manage per that range.	**URGENT** **General – Evaluate as above AND** • **OBTAIN ABDOMINAL X- RAY**. **Blood Lead Levels** • **Confirm initial BLL with repeat VENOUS BLL***: – **WITHIN 48 HOURS if BLL is 44.5-59.4 mcg/dL.** – **WITHIN 24 HOURS if BLL is 59.5-69.4 mcg/dL.** • Confirmatory venous BLL and other medically appropriate actions must occur **BEFORE** initiating chelation. • Monitor response to chelation with VBLLs. • Follow-up with VBLLs every 2-4 weeks (more frequently if status requires) until trend is downward or stable or as trend indicates. • Consider modifying protocol if VBLLs	**URGENT** **Manage as above AND** • Consider chelation. • Refer to CCS. • Evaluate whether hospitalization is needed to reduce lead exposure and achieve compliance with treatment protocols. • If admitted, child must be discharged to a lead-safe environment. • Immediately notify local CLPPP or state CLPPB. **Chelation Therapy** • **Consult with a physician experienced in managing chelation.** • If admitted and chelation therapy is recommended, consult with hospital pharmacist to obtain medication • Perform gut decontamination, if indicated, **BEFORE** chelation.

BLL[2] 44.5-69.4 mcg/dL	EVALUATION AND TESTING	MANAGEMENT
	are not decreasing as expected or remain chronically elevated, e.g. from a retained bullet. • If venous retest is in another range, retest per that range. • * If initial capillary BLL ≥ 44.5 mcg/dL and confirmatory VBLL < 3.5 mcg/dL, repeat VBLL in 2-4 weeks is recommended. Sooner if symptomatic or probable lead exposure, in order to rule out possible false negative.	• Consider one of two chelating agents: – Succimer per outpatient protocol; give on inpatient basis if compliance or exposure reduction cannot otherwise be assured, – **OR** CaNa2EDTA per hospital protocol. *** CAUTION: USE ONLY <u>CALCIUM</u> Na^2EDTA.**[12] • Very high BLLs have been associated with renal tubular dysfunction. If using potentially nephrotoxic chelating agents (e.g. $CaNa^2EDTA$), **TEST RENAL FUNCTION BEFORE AND DURING TREATMENT**.[13] • Repeat treatment cycles may be needed due to blood lead rebound.

12 Deaths Associated with Hypocalcemia from Chelation Therapy
13 Preventing Lead Poisoning in Young Children: A Statement by the Centers for Disease Control

BLL[2] ≥ 69.5 mcg/dL	**EVALUATION AND TESTING**	**MANAGEMENT**
Screening BLLs may be capillary or venous **Every retest must be venous[3]**	**MEDICAL EMERGENCY** **General – Evaluate as 44.5- 69.4 range.** • **OBTAIN ABDOMINAL X- RAY.** **Blood Lead Levels** • **IMMEDIATELY confirm initial BLL with repeat VENOUS BLL*.** • Confirmatory venous BLL and other medically appropriate actions must occur **BEFORE** initiating chelation. • Monitor response during chelation with VBLLs. • Follow-up with VBLLs every 2-4 weeks (more frequently if status requires) until trend is downward or stable or as trend indicates. • Consider modifying protocol if VBLLs are not decreasing as expected or remain chronically elevated, e.g. from a retained bullet. • If venous retest is in another range,	**MEDICAL EMERGENCY** **Manage as above AND** • **If BLL is confirmed**, hospitalize to stabilize, chelate, reduce lead exposure, and monitor progress. • Immediately notify local CLPPP or state CLPPB. • Child must be discharged to a lead-safe environment. **Chelation Therapy** • **Consult with physician experienced in managing chelation.** • Depending on BLL and clinical status, initiating chelation prior to receiving confirmatory result may be indicated. • Perform gut decontamination, if indicated, **BEFORE** chelation. • **CAUTION:** If using $CaNa_2EDTA$ with dimercaprol (BAL) for chelation:

BLL[2] ≥ 69.5 mcg/dL	**EVALUATION AND TESTING**	**MANAGEMENT**
	retest per that range. • * If initial capillary BLL ≥ 44.5 mcg/dL and confirmatory VBLL < 3.5 mcg/dL, repeat VBLL in 2-4 weeks is recommended. Sooner if symptomatic or probable lead exposure, in order to rule out possible false negative.	– **Use only CALCIUM Na^2EDTA**.[12] – **Assess for peanut allergy** (BAL is suspended in peanut oil). • Very high BLLs have been associated with renal tubular dysfunction. If using potentially nephrotoxic chelating agents (e.g. $CaNa^2EDTA$), **TEST RENAL FUNCTION BEFORE AND DURING TREATMENT**.[13] • Repeat treatment cycles may be needed, due to blood lead rebound.