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# Pediatric Lead Screening Training

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2021 Provider Training



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CenCal Health

# Agenda

## Lead Screening Exposure, Guidelines & Best Practices

- Dr. Kristen Hughes, Santa Barbara Public Health

## PCP Provider Resources

- Rachel Ponce, CenCal Health

## Q & A





# Childhood Lead Exposure and Poisoning

Kristen Hughes, MD  
February 23, 2021

# Learning Objectives:

- Understand the health risks of lead exposure and poisoning in children
- Identify sources of lead exposure
- Understand when and how to conduct a lead risk assessment and perform blood lead testing
- Understand the medical management of childhood lead exposure and poisoning

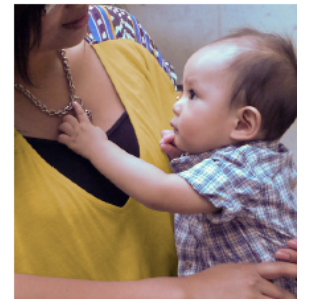
# Blood Lead Facts:

- Lead is a heavy metal that is toxic at low concentrations
- There is **NO SAFE LEVEL** of lead in the body
- Lead is harmful to children:
  - In US ~half a million children 1-5 years old have blood lead levels (BLL) >5 mcg/dL
- PREVENTION and the timely and effective reduction in exposure is the primary goal



# Principles of Lead Exposure in Children:

- A child's blood lead concentration depends on their environment, habits, and nutritional status
- Toddlers 1-2 years old are at increased risk due to hand-mouth behavior
- Children <6 years old absorb lead more rapidly due to their rapid growth and development
- Low income/children in publicly funded programs (ie. Medi-Cal) are at higher risk



# Health Risks of Lead Exposure on Children

# Health Risks of Lead Exposure and Poisoning:

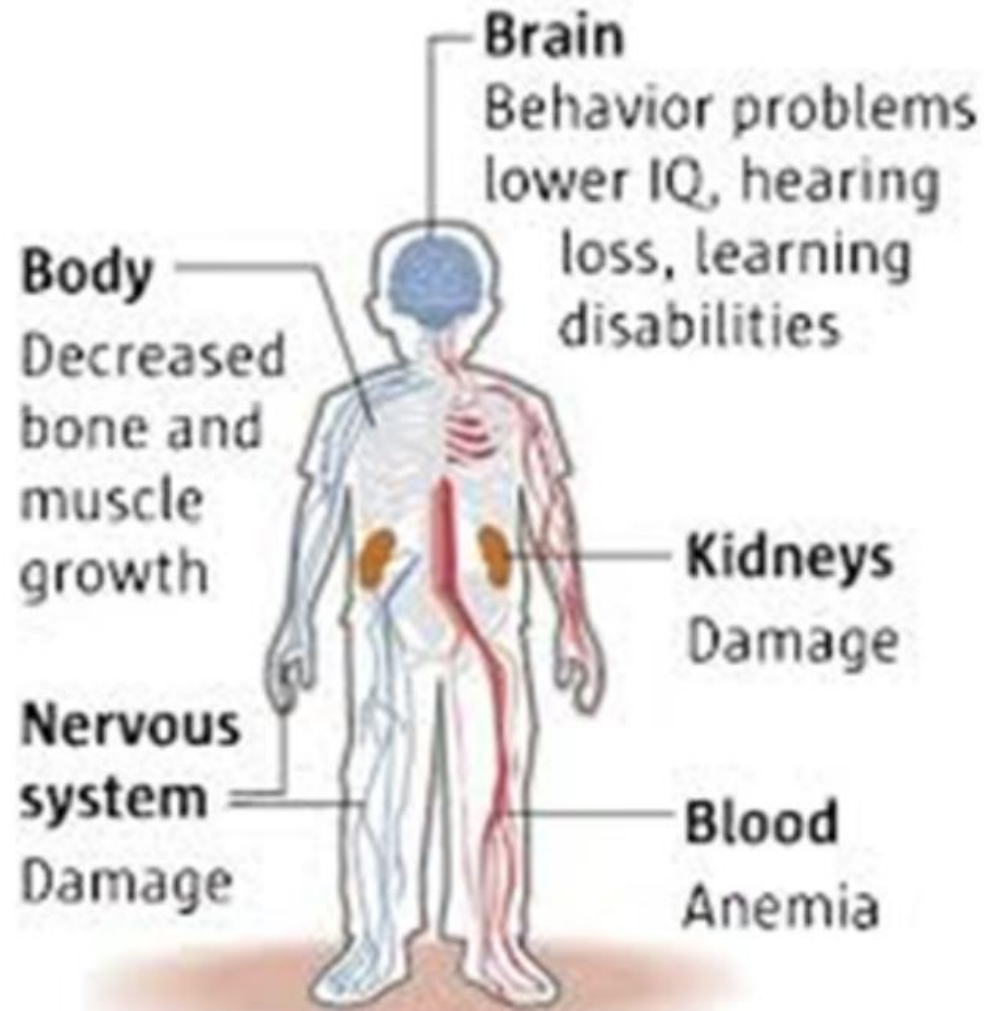
- Most children with lead poisoning do not look or act sick
- Even levels below 10  $\mu\text{g}/\text{dL}$  are associated with subclinical effects
- Effects are variable so, always consider lead in your differential!





## CHILDREN

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## Health Risks of Lead Exposure and Poisoning:

- Childhood lead exposure is linked to adult hypertension, renal insufficiency, and higher CV related mortality
- Levels above 100  $\mu\text{g}/\text{dL}$  may result in death

# Sources of Lead Exposure

# You can find lead...



in chipping paint



in remedies like azarcon, greta, or pay-loo-ah



on your hair, skin, shoes, and clothes after work



in bullets and fishing sinkers



in some toys



in some jewelry

[www.dtsc.ca.gov/Toxic-Jewelry-Samples.cfm](http://www.dtsc.ca.gov/Toxic-Jewelry-Samples.cfm)



in some candies

[www.cdph.ca.gov/data/Documents/fdbLICLIC07.pdf](http://www.cdph.ca.gov/data/Documents/fdbLICLIC07.pdf)



in bare dirt



in traditional makeup, like kohl, surma, or sindoor



in some dishes and pots



in house dust



in foods and brightly-colored spices from outside the USA

Even if it says “lead free”...

These have all been tested, and **ALL OF THEM HAVE LEAD:**



Lead is a poison that can harm a child’s brain. It can make it hard for children to learn, pay attention and behave. Most children who have lead poisoning do not look or act sick. The only way to know if your child has lead in his or her body is for your child to get a blood test for lead. Ask your doctor to test your child for lead.

Is there  
lead in or  
around  
your  
home?

## Is Lead Hiding in Your Home?

Some sources of lead might surprise you. Learn where to look for lead in and around your home.



**Peeling or deteriorated paint and dust in older homes and bare dirt outside—**

Pintura descarapelada o deteriorada y polvo en casas viejas y tierra descubierta



**Work clothes and shoes if household members work with lead —**

Ropa de trabajo y zapatos de los miembros de la casa que trabajan con plomo



**Some traditional remedies, cosmetics, or ceremonial powders —**

Algunos remedios tradicionales, cosméticos, o polvos ceremoniales



**Some imported foods and spices brought to the U.S. by family and friends —** Algunas

comidas y especias importadas, especialmente las especias de colores brillantes que han sido traídas a los EE. UU. por amigos y familia



**Some ceramic dishware and leaded crystal —** Algunas

cerámicas y cristal de plomo

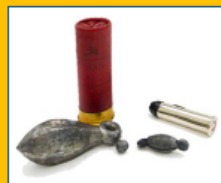


**Some toys, jewelry, and other objects —** Algunos juguetes, joyas y otros objetos



**Plumbing containing lead/ lead pipes or fixtures —**

Plomería o grifería que contiene plomo



**Bullets and fishing sinkers —** Balas y plomos de pescar



**Some candy from outside the US —** Algunos dulces importados

## ¿Se esconde plomo en su casa?

Algunas fuentes de plomo pueden sorprenderte. Aprenda dónde buscar plomo dentro y alrededor de su casa.

# Lead Exposure Checklist

## IS YOUR CHILD AT RISK FOR LEAD POISONING?

### CHECK FOR LEAD IN AND AROUND YOUR HOME:



- **Paint:** Move your child's things away from and safely repair chipping paint.
- **House Dust:** Wet wipe or mop surfaces to remove dust and dirt. Do not let your child chew on windowsills or other surfaces.
- **Bare Dirt:** Cover bare dirt outside where your child plays.
- **Vinyl Mini-Blinds:** Replace old vinyl mini-blinds and do not let your child chew on them.



- **Plumbing Materials:** Tap water is more likely to have lead if plumbing materials, including solder or service lines, contain lead. Reduce potential exposure to lead in tap water by running water until it feels cold and only drawing from the cold tap for cooking, drinking, or baby formula (if used).
- **Water From Wells:** The only way to know if your water has lead is to have it tested.

Learn more about water testing: [www.epa.gov/lead/protect-your-family-exposures-lead#testdw](http://www.epa.gov/lead/protect-your-family-exposures-lead#testdw)



- **Dishes, Pots, & Water Crock:** Avoid using dishes, pots, and water crocks that are worn or antique, from a discount or flea market, made of crystal, handmade, or made outside the USA unless they have been tested and don't have lead.



- **Food & Spices:** Avoid imported foods and brightly colored spices that might have lead in them, like chapulines and turmeric.
- **Candies:** Avoid recalled candies: [www.cdph.ca.gov/Programs/CEHD/DCS/Pages/FDBPrograms/FoodSafetyProgram/LeadInCandy.aspx](http://www.cdph.ca.gov/Programs/CEHD/DCS/Pages/FDBPrograms/FoodSafetyProgram/LeadInCandy.aspx)



- **Traditional Make-Up & Traditional Remedies:** These products often have lead in them: surma, azarcon, greta, pay-loo-ah. Talk to your doctor before using these or other traditional make-up or remedies (e.g., brightly colored powders, traditional Chinese or Ayurvedic remedies).



- **Toys:** Check toys for peeling paint and wash them often. Old or vinyl toys are more likely to have lead. Avoid recalled toys: [www.cpsc.gov](http://www.cpsc.gov)
- **Jewelry:** Do not let your child suck on or play with jewelry. Learn more: [www.dtsc.ca.gov/Toxic-Jewelry-Samples.cfm](http://www.dtsc.ca.gov/Toxic-Jewelry-Samples.cfm)



- **Lead Fishing Sinkers & Lead Bullets:** Do not let your child touch lead fishing sinkers or lead bullets or casings.
- **Lead Solder:** Keep your child away from activities that use lead solder, like welding, or stained glass or jewelry making.



- **Take-Home Lead:** Avoid taking lead home from work or hobbies. If you work with lead, change out of work clothes and shoes and wash up before getting in your car or going home.
- **Home Repair/Improvement Projects:** Do not scrape or sand paint on your home unless you know your paint does not have lead in it.

# 10 Tips for Reducing Lead Sources at Home:

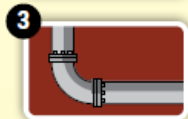


**1 Peeling or deteriorated paint in older homes:** Wet-mop and wet-wipe house dust, and be sure to wash your child's hands

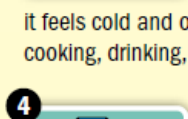
and toys often. Keep cribs and other children's toys away from window sills or peeling paint. Use lead-safe work practices to repair your home. If your home was built before 1978, lead in your paint may get into your dust. Lead dust may also be tracked into the home from soil contaminated by leaded gasoline or industrial emissions.



**2 Bare dirt outside:** Cover bare dirt where children play with grass, plants, bark, or gravel.



**3 Plumbing containing lead/lead pipes or fixtures:** Reduce potential exposure to lead in tap water by running water until it feels cold and only drawing from the cold tap for cooking, drinking, or baby formula (if used).\*



**4 Work clothes and shoes if household members work with lead:** If you work with lead, change out of work clothes and

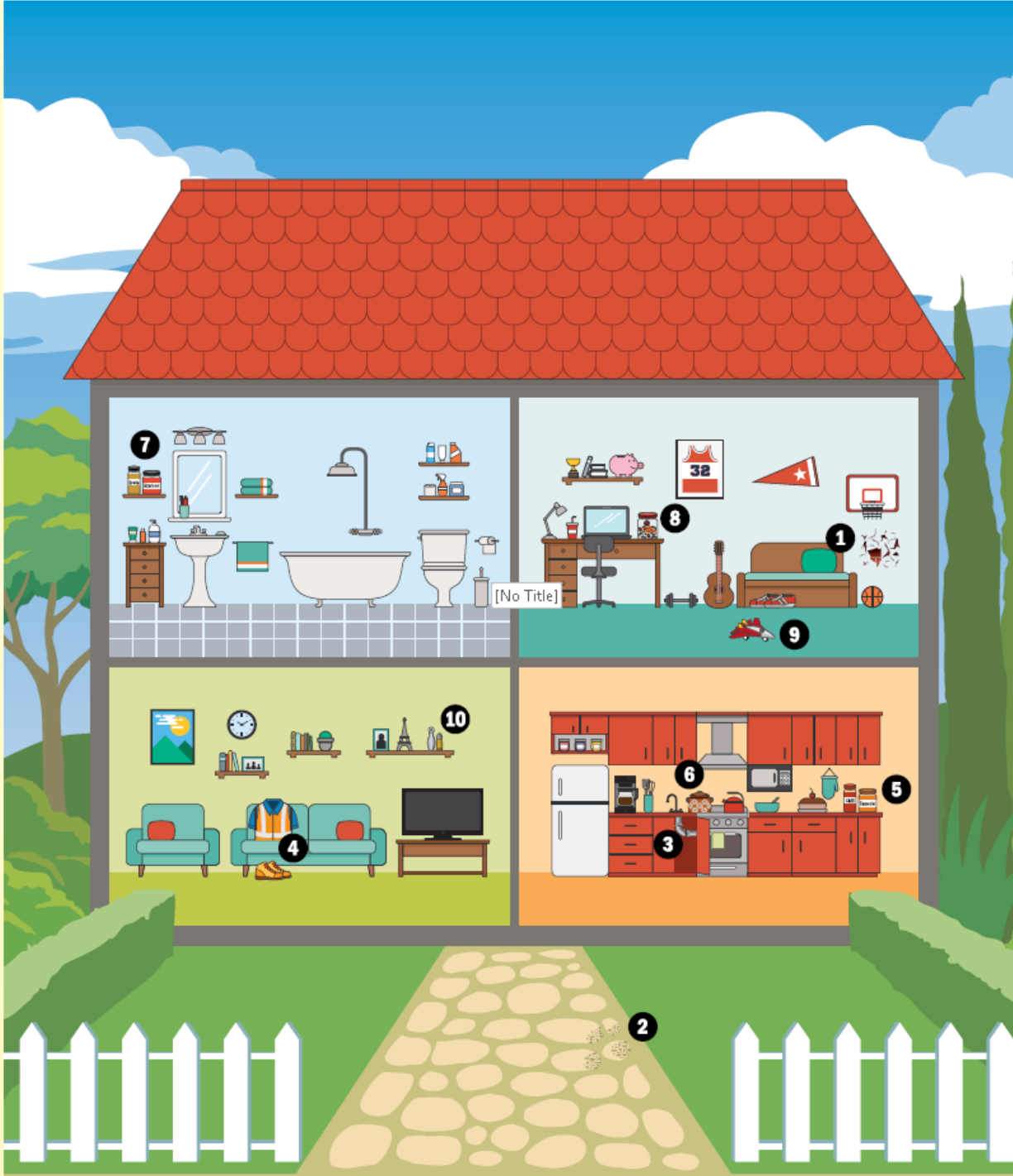
shoes and wash up before getting in your car or going home. Some jobs and hobbies involving lead include battery recycling, construction, stained glass making, and time spent at a shooting range.



**5 Some foods and spices:** Avoid imported foods and especially brightly colored spices brought to the U.S. from other countries by family and friends, such as chapulines, turmeric, khmeli suneli, or dried chili powder.



\* **Water saving tip:** Collect your running water and use it to water plants not intended for eating.



**6 Some ceramic dishware:** Avoid using dishes, pots, or water crocks that are worn or antique, from a discount or flea market, handmade, or made outside of the U.S., unless they have been tested and don't have lead.



**7 Traditional remedies, cosmetics, or ceremonial powders.** Talk to your doctor if you use Ayurvedic or Chinese medicines, remedies like Azarcon, Greta, Paylooh, or other traditional remedies, or traditional cosmetics like Kohl, Surma, or Sindoor. These items may have lead.



**8 Some candy:** Avoid giving your child sweets. Some candies from outside the U.S. may have lead, especially those with dried chili or tamarind. Fresh fruits and vegetables and lean meats are healthier choices.



**9 Some toys, jewelry, and other objects:** Keep jewelry out of your child's hands and mouth. Check toys for peeling paint and wash them often. Old or vinyl toys are more likely to have lead. Avoid recalled items: [www.cpsc.gov](http://www.cpsc.gov).



**10 Bullets and fishing sinkers:** Do not let your child touch lead fishing sinkers or lead bullets or casings. Always wash up after handling these items.

For more information about childhood lead poisoning prevention, visit [www.cdph.ca.gov/Programs/CLPPB](http://www.cdph.ca.gov/Programs/CLPPB) or contact:



# How the COVID pandemic may be increasing lead exposure

## Fixing Up Your Home During COVID-19? Learn how to be lead-safe.

Many people are repairing or remodeling their homes during COVID-19. If you are working on an older home, make sure you know how to keep your family safe from lead hazards.

Homes built before 1978 may have lead in the paint. Scraping or sanding old paint can create dangerous lead dust, which is very harmful to young children and can cause lead poisoning. Lead can harm the brain, nerves, and kidneys of a young child and can make it hard for them to learn, pay attention, and behave.

### Before you renovate or remodel:

- **Have your paint tested for lead.**
- **Hire a CA State Certified lead professional.** These professionals are trained to test for lead in your home and safely remove it.
- For more information, visit [cdph.ca.gov/Programs/CCDC/DCDC/CLPPB/Pages/home\\_test.aspx](https://www.cdph.ca.gov/Programs/CCDC/DCDC/CLPPB/Pages/home_test.aspx).

**If you do not plan to hire a lead professional, follow these tips to help contain the lead dust while you work.**

### Before you work:

- Tape down plastic sheeting for inside and outside jobs.
- Make a curtain by taping plastic sheeting over the doorway to the work area.
- Put on work clothes or disposable coveralls and keep them separate from other clothes.

### While you work:

- Keep children, pregnant women, and pets away.
- Use a spray bottle to mist all surfaces with water before and during sanding and scraping.
- Do not leave the work area in your work clothes or shoes.

### After you work:

- Clean up daily: Use a spray bottle to mist paint chips, fold plastic sheeting inward, and place in a sealed bag.
- Place work clothes and shoes in a bag. Shower and wash your hair. Wash work clothes separately.

**If you think your child or other household member has been around lead, ask your doctor to test for lead poisoning.**



## ¿Arreglando su casa durante COVID-19? Aprenda a estar a salvo del plomo.

Muchas personas están reparando o remodelando sus casas durante COVID-19. Si está trabajando en una casa vieja, asegúrese de saber cómo mantener a su familia a salvo de los peligros del plomo.

Las casas construidas antes de 1978 pueden tener plomo en la pintura. Raspar y lijar pintura vieja puede crear un peligroso polvo de plomo, que es muy perjudicial para los niños pequeños y puede causar envenenamiento por plomo. El plomo puede dañar el cerebro, los nervios y los riñones de un niño pequeño y puede dificultar aprender, prestar atención y comportarse.

### Antes de renovar o remodelar:

- **Haga una prueba de plomo a su pintura.**
- **Contrate a un profesional del plomo que tiene certificación por el Estado de California.** Estos profesionales están capacitados para detectar plomo en su casa y removerlo en una manera segura.
- Para más información, visite <https://www.cdph.ca.gov/Programs/CCDC/DCDC/CLPPB/Pages/LRCHomeLeadTest-Sp.aspx>.

**Si no va a contratar a un contratista, siga estos consejos para ayudar a controlar el polvo de plomo mientras trabaja.**

### Antes de trabajar:

- Asegure hojas de plástico para trabajos tanto adentro como afuera.
- Haga una cortina asegurando láminas de plástico en la puerta de entrada a la zona de trabajo.
- Póngase ropa de trabajo o overoles desechables y manténgalos separados de otra ropa.

### Mientras trabaja:

- Mantenga a los niños, las mujeres embarazadas, y los animales lejos.
- Utilice una botella de aerosol para humedecer todas las superficies con agua antes y durante el lijado y el raspado.
- No salga del área de trabajo con la ropa o zapatos de trabajo puesta.

### Después de trabajar:

- Limpie todos los días, utilice una botella de aerosol para regar con agua las partículas de pintura.
- Coloque la ropa de trabajo y los zapatos en una bolsa. Dúchate y lávate el cabello. Lave la ropa de trabajo por separado.

**Si usted piensa que su hijo o un miembro de la familia ha estado en contacto con plomo, pregunte a su médico acerca de una prueba de plomo en la sangre.**



# LEAD IN TAP WATER

## A FACT SHEET FOR CALIFORNIA

**In California, most tap water intended for drinking does not contain lead.**



Tap water is more likely to have lead if:

- plumbing materials, including fixtures, solder, or service lines, have lead in them;
- water does not come from a public water system (e.g., a private well).

**The only way to know if tap water has lead is to have it tested.**

For information on testing your water for lead, visit

[www.epa.gov/lead/protect-your-family-exposures-lead](http://www.epa.gov/lead/protect-your-family-exposures-lead)

or call 800-426-4791.

**Steps you can take to reduce any potential exposure to lead in tap water:**

- **Flush the pipes in your home.** Let water run at least 30 seconds before using it for cooking, drinking, or baby formula (if used). If water has not been used for 6 hours or longer, let water run until it feels cold (1 to 5 minutes).\*
- **Use only cold tap water for cooking, drinking or baby formula (if used).** If water needs to be heated, draw water from the cold water tap and heat on the stove or in a microwave.
- **Care for your plumbing.** Lead solder should not be used for plumbing work. Periodically remove faucet strainers and run water for 3-5 minutes.\* Consider replacing brass faucets bought before 2010 (but especially before 1986).
- **Consider using a water filter certified to remove lead.**



**WARNING:** Some water crocks have lead.

Do not give your child water from a water crock unless you know the crock does not have lead.

\* Water Saving Tip: Collect your running water and use it to water plants not intended for eating.

# Do You Cook with Traditional Pottery? It May Contain Lead!



**Lead is dangerous for everyone,  
especially for children under  
6 years of age.**

- Lead is in some traditional pottery.
- Lead can cause serious health problems.
- If you use traditional pottery:
  - Test it for lead. You can buy lead test kits at hardware stores.
  - Even if the test shows that your pottery does not have lead, test again if it becomes worn, chipped, or cracked.
  - If it has lead or you don't know, do not use it for cooking, serving or storing food and drinks. Use it only for decoration.
- A child with lead poisoning may not look or act sick. Ask your doctor to test your child for lead.





### How can I find out if my dishware is safe?

If the dishware is sold at a major retail store, ask the salesperson or customer service if the dishes meet California Proposition 65 regulations. You can also contact the manufacturer directly. The only way to find out how much lead is in your dishware is to send it to a laboratory for testing. This is expensive and may damage the dishware.

Some people use color-change test kits, available at hardware stores, to check for lead. The test kits do not tell you the exact amount of lead in the dish. If lead is beneath the surface of the dish, the test kits will not detect it. If the test kit is positive, the dish should not be used for food or drinks. A negative result does not ensure that the dish is safe.

### Is there a way to remove lead from my ceramic dishware?

No. Many people use various traditional methods to “cure” dishware believing that it will also remove the lead. Some methods include boiling the dishware in water or in water with an acidic substance (e.g., vinegar or lemon), washing the dishware with bleach, and rubbing it with garlic and salt. These traditional “curing” methods will **not** eliminate lead in dishware.



*Keep your family safe—don't use dishware with lead for cooking, serving, or storing food or drinks. Keep it away from children. Enjoy the color and beauty of your dishware by using it for decoration. Also, remember that lead is found in other sources such as home remedies, candies, and toys. Ask your doctor to test your children for lead.*

*For more information, go to [www.cdph.ca.gov/programs/clpph](http://www.cdph.ca.gov/programs/clpph) or contact the Lead Program in your County Health Department.*



# Lead

in Traditional  
Ceramic Dishware

## WARNING



# Lead - Pregnancy/Breastfeeding:

- Lead crosses the placenta
- If maternal blood lead level is elevated:
  - Mother requires more frequent testing
  - Infant's cord blood tested at birth
  - Infant BLL at birth proportional to / close to maternal BLL
- CDC guidance on testing and follow-up of pregnant women with BLLs > 5 mcg/dl and testing of infants can be found at:  
<http://www.cdc.gov/nceh/lead/publications/LeadandPregnancy2010.pdf>
- This website also has recommendations for breast feeding and follow-up testing of infants who may be exposed



# Well Fed = Less Lead



## Eating healthy foods can help keep your child safe from lead

Lead can hurt your child. Lead can harm a child's brain and make it hard for children to learn, pay attention and behave.

Children should eat healthy meals and snacks at least every 3-4 hours.

So what's the best way to fuel your child's growth and to help keep your family safe from lead?

## Make healthy food choices to keep your child safe from lead.

### Choose:

- Lean meats, cooked vegetables, salads, nuts, olives
- Baked or broiled chicken or turkey (free of nitrites)
- Tortillas baked or heated on a comal or grill
- Veggie sticks with salsa, avocado or hummus
- Sliced lean meats (free of nitrites), beans or edamame
- Water or low-fat milk
- Plain yogurt with fruit or mixed fruit salad
- Toasted coconut, nuts or fresh fruit

### Instead of:

- Fast food meals
- Chicken nuggets
- Fried tortillas
- Chips or other fried snacks
- Hot dogs or high fat lunchmeat
- Soda
- Ice cream or pudding
- Candy\* or other sweets



## Be a healthy role model for your child and consider these healthy foods:



- **Protein.** Choose seafood, lean meat and poultry, eggs, beans, peas, soy products, and unsalted nuts and seeds.
- **Vegetables.** Serve fresh, frozen or canned vegetables. Provide a variety of colors, like dark green, red, orange, yellow and purple vegetables. If serving canned or frozen vegetables, look for options lower in sodium.
- **Fruits.** Offer fresh, frozen or canned fruits. If your child drinks juice, choose 100% juice without added sugars and limit number of servings. Look for canned fruit that says it's light or packed in its own juice, meaning it's low in added sugar.
- **Grains.** Choose whole grains, such as whole-wheat bread, oatmeal, popcorn, quinoa, or brown or wild rice.
- **Dairy.** Encourage your child to eat and drink low-fat dairy products, such as milk, yogurt, cheese, soymilk or nut milks without added sugars.

## Limit foods with:

- **Added sugar**, like candy, granola bars, soda, sugary breakfast cereal and sweet treats.\*
- **Added fats**, like fried foods, fast foods, chips, pork rinds and other processed foods.

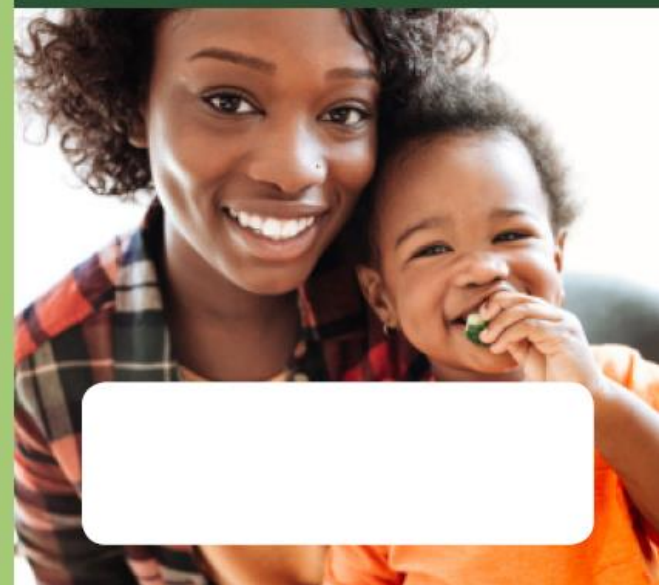
\*Some candies from outside the USA may contain lead.  
For photos of candies found to contain lead, visit  
[www.cdph.ca.gov](http://www.cdph.ca.gov)

## Avoid Lead Sources.

### Lead Can Be Found In:

- Old, chipped or peeling paint
- House dust
- Bare dirt around the home
- Home remedies, like azarcon, greta, pay-loo-ah, or some Ayurvedic or traditional Chinese remedies
- Imported foods like chapulines
- Imported candies\*
- Spices, such as turmeric or chili
- Dishes or pots used for cooking, eating, or drinking, especially those that are old, worn, chipped, cracked, made of crystal or from outside the USA
- Water that is stored in ceramic water crocks
- Jewelry or toys
- Lead bullets, fishing sinkers or solder

For more information, go to:  
[www.cdph.gov/programs/clppb](http://www.cdph.gov/programs/clppb)



When and how to conduct a lead  
risk assessment and/or perform  
blood lead testing

# Standard of Care Guidelines on Childhood Lead Poisoning for California Health Care Providers



## No Level of Lead in the Body is Known to Be Safe

"Low-level lead exposure, even at blood lead concentrations below 5 µg/dL (50 ppb), is a causal risk factor for diminished intellectual and academic abilities, higher rates of neurobehavioral disorders such as hyperactivity and attention deficits, and lower birth weight in children. No effective treatments ameliorate the permanent developmental effects of lead toxicity. Reducing lead exposure from residential lead hazards, industrial sources, contaminated foods or water, and other consumer products is an effective way to prevent or control childhood lead exposure."

AAP Council on Environmental Health; Prevention of Childhood Lead Toxicity Policy Statement: Pediatrics. 2016; 138(1): e20161493

"Blood lead concentrations, even those below 10 mcg per deciliter, are inversely associated with children's IQ scores at three and five years of age, and associated declines in IQ are greater at these concentrations than at higher concentrations. These findings suggest that more U.S. children may be adversely affected by environmental lead than previously estimated."

Intellectual Impairment in Children with Blood Lead Concentrations below 10 mcg per Deciliter. Richard L. Canfield, Charles R. Henderson, Jr., Deborah A. Cory-Slechta, Christopher Cox, Todd A. Jusko, and Bruce P. Lanphear. The New England Journal of Medicine 2003; 348: 1517 – 1528

"Evidence from this cohort indicates that children's intellectual functioning at 6 years of age is impaired by blood lead concentrations well below 10 mcg/dL."

Blood Lead Concentrations < 10 mcg/dL and Child Intelligence at 6 Years of Age, Todd A. Jusko, Charles R. Henderson Jr., Bruce P. Lanphear, Deborah A. Cory-Slechta, Patrick J. Parsons, and Richard L. Canfield, Environmental Health Perspectives 2008; 116: 243 - 248

## California Statutes and Regulations for Providers Caring for Children 6 Months to 6 Years of Age

California state statutes and regulations impose specific responsibilities on doctors, nurse practitioners, and physician's assistants doing periodic health care assessments on children between the ages of 6 months and 6 years. In the State of California, "screening" means testing an asymptomatic child for lead poisoning by analyzing the child's blood for concentration of lead. California regulations require a blood lead test at 12 and 24 months of age. This is a brief summary of the health care provider's responsibilities, which apply to all physicians, nurse practitioners, and physician's assistants, not just Medi-Cal or Child Health and Disability Prevention (CHDP) providers.

<b>ANTICIPATORY GUIDANCE</b>	<p>At each periodic assessment from 6 months to 6 years. Under California state laws and regulations, all health care providers are <b>required</b><sup>1</sup> to inform all parents and guardians about:</p> <ul style="list-style-type: none"> <li>• The risks and effects of childhood lead exposure.</li> <li>• The requirement that children enrolled in Medi-Cal receive blood lead tests.</li> <li>• The requirement that children not enrolled in Medi-Cal who are at high risk of lead exposure receive blood lead tests.</li> </ul>
<b>BLOOD LEAD TEST</b>	<ul style="list-style-type: none"> <li>• All children in publicly supported programs such as Medi-Cal, Women, Infants and Children (WIC), and CHDP at both 12 months and 24 months of age.<sup>1</sup></li> <li>• Perform a "catch up" test for children age 24 months to 6 years in a publicly supported program who were not tested at 12 and 24 months.<sup>1</sup></li> </ul>
<b>ASSESS</b>	<ul style="list-style-type: none"> <li>• If child is not in a publicly supported program: <ul style="list-style-type: none"> <li>- Ask: "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 remodeled?" Blood lead test if the answer to the question is "yes" or "don't know."<sup>1</sup></li> </ul> </li> <li>• Blood lead test if a change in circumstances has put child at risk of lead exposure.</li> <li>• <i>Other indications for a blood lead test:</i><sup>2</sup> <ul style="list-style-type: none"> <li>- Parental request</li> <li>- Sibling, playmate or other close contact with an increased blood lead level</li> <li>- Suspected lead exposure (see possible sources of lead exposure on other side)</li> <li>- History of living in or visiting country with high levels of environmental lead</li> </ul> </li> </ul>

<sup>1</sup> Health and Safety Code, sections 105285-105286; California Code of Regulations, Title 17, Sections 37000 to 37100

<sup>2</sup> Items in italics are not in regulations but also should be considered.

## Federal Refugee Guidelines ([www.cdc.gov/immigrantrefugeehealth/](http://www.cdc.gov/immigrantrefugeehealth/))

- Blood lead test all refugee children 6 months to 16 years old at entry to the U.S.
- Within 3 - 6 months post-resettlement, follow-up blood lead tests should be conducted on all refugee children aged 6 months to 6 years, regardless of initial screening blood lead level.
- Evaluate the child's iron status including a hemoglobin/hematocrit and red blood cell indices.
- Children under the age of six should be given a daily multivitamin with iron.



# Screening Guidelines

## Risk Assessment

- Lead risk assessments periodically **from 6 months to 6 years of age**



- The risk assessment should be clearly documented in the medical record and appropriate questions **must be outlined in the medical record**

## Blood Lead Test

- Blood lead testing must be performed **at ages 12 months and 24 months**, and in between as indicated by the risk assessment
- “Catch-up” - If a lead test was not done at 24 months, then a lead test should be performed between 24 and 72 months





# **Childhood Lead Poisoning Risk Questionnaire:**

- 1. Does your child live in or regularly visit once a week or more any house or building built before 1978 with chipping peeling paint, or with recent or ongoing renovation?**
- 2. Has your family or child recently in the past 12 months visited or lived in another country for over 1 month, or have they every lived outside of the United States?**
- 3. Does your child have a parent, sibling or housemate being followed or treated for an elevated lead level or lead poisoning?**
- 4. Does your child frequently come into contact with an adult whose job or hobby involves exposure to lead?**
- 5. Does your child eat food or drink liquids that were stored in imported crystal, imported ceramics such as water crocks, or pewter dishes?**
- 6. Does your child have contact with cosmetics, kohl, candies, spices, jewelry, ceramic dishes, or home health remedies not made in the U.S.?**
- 7. Does your child play in loose soil, near a busy road, or near any industrial sites such as battery recycling plan, junkyard, or lead smelter?**
- 8. Have you ever seen your child eat or try to eat dirt, toy jewelry, or vinyl mini blinds?**

# Indications for BLL Testing:

- Children in publicly supported programs at both 12 and 24 months
- Children age 24 months to 6 years in publicly supported programs who were not tested appropriately
- If parent answers “yes” or “unknown” to screening question
- Parent requests
- Refugee or recent immigrant
- History of living or visiting a high risk country
- Change in circumstance that put child at high risk / suspected exposure
- If known lead exposure in family
- Any child a health care provider thinks is at risk



# Principles of Lead Testing:

- Lead screening - capillary specimen obtained by a finger prick
- Skin surface must be clean- false positives are common
- Elevated capillary levels - confirm on a venous sample
- If capillary is elevated but venous is not - the child may live in a lead contaminated environment
- Efforts should be made to identify and eliminate the source of lead in these cases

## Blood Lead Testing

### Which sample type to use?

Blood lead tests fall into three main types:

Test type	Draw/Sample Type
Screening	Capillary or Venous
Confirmatory	Venous
Monitoring	Venous

*Note: Do not use Point of Service devices for confirmatory testing or monitoring.*

### Avoiding lead contamination

To minimize false positive results:

- Be careful when selecting gloves and towels. Some **gloves and recycled paper towels** have been found to contain lead and pose a risk of contamination.
- Wash child's hands thoroughly and **allow to air dry**. Do not dry with paper towels.
- **Jewelry** (on the patient, the parent or the person performing the blood draw) has been found to contain lead and could contaminate the specimen. All jewelry (including watches) should be removed and hands washed, before putting on gloves and drawing a sample.

Other items can cause lead contamination:

- Dust from vents, open windows or doors
- Cell phones, sunglasses
- Keys or key rings
- Other items children play with or chew on

### Specimen Labeling

Information to include on lab requisition:

- Patient Name
- Patient Address
- Patient Phone
- Patient Gender
- Patient Birth Date
- Patient's Employer Contact Info (if applicable)
- Provider Name
- Provider Address
- Provider Phone
- Date of Collection
- Draw/sample type (capillary, venous)
- **Lead Care II Users** - please assign individual accession numbers to each sample

Be sure that draw/sample type is included on the label (C for capillary, V for venous). **Recommend:** Write "Use certified lead-free tube" (e.g., tan top or royal blue top) on lab requisition. Any other tube must have been confirmed lead-free.

See video on collecting blood lead specimens on Centers for Disease Control and Prevention (CDC) web site: CDC Guidelines for Collecting and Handling Blood Lead Samples (2004) – [www.cdc.gov/nceh/lead/training/blood\\_lead\\_samples.htm](http://www.cdc.gov/nceh/lead/training/blood_lead_samples.htm)

For more information, contact the Childhood Lead Poisoning Prevention Branch at (510) 620-5600 or visit our web site at

### Use the Proper Collection Tube

**Tube must be proven lead-free**

#### Capillary Samples



Several manufacturer-certified tube types available

Capillary microcollection container  
Top color: Usually Lavender  
Use: May use if certified by manufacturer for lead testing  
Anticoagulant: EDTA

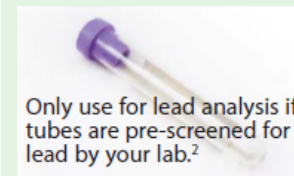
#### Venous Samples



Top color: Tan  
Use: Lead analysis  
Anticoagulant: EDTA or Heparin



Top color: Royal Blue  
Use: Trace metals analysis  
Anticoagulant: EDTA or Heparin



Only use for lead analysis if tubes are pre-screened for lead by your lab.<sup>2</sup>

Top color: Lavender  
Use: **Only use for lead analysis if tubes are pre-screened for lead by your lab.**<sup>2</sup>  
Anticoagulant: EDTA

<sup>1</sup> know in advance the acceptable anticoagulant for your analyzing lab

# Medical Management of Childhood Lead Exposure and Poisoning

## BLOOD LEAD TEST AND ANTICIPATORY GUIDANCE

**Table 1: Recommendations on Medical Management of Childhood Lead Exposure**

No level of lead in the blood is known to be safe. In 2012, the Centers for Disease Control and Prevention (CDC) established a new “reference value” of 5 micrograms per deciliter (mcg/dL) for blood lead levels (BLLs), thereby lowering the level at which evaluation and intervention are recommended.<sup>1</sup> **Contact the California Department of Public Health, Childhood Lead Poisoning Prevention Branch (CLPPB), (510) 620-5600, [www.cdph.ca.gov/programs/CLPPB](http://www.cdph.ca.gov/programs/CLPPB), for additional information about childhood lead toxicity.**

BLL <sup>2</sup>	EVALUATION AND TESTING	MANAGEMENT
<p data-bbox="593 575 708 644">&lt; 5 mcg/dL</p> <p data-bbox="593 682 800 933">Initial BLL and routine retest may be capillary (CBLL) or venous (VBLL)<sup>3, 4</sup></p> <p data-bbox="593 972 800 1115">Retest for identified risk must be venous<sup>3</sup></p> <p data-bbox="593 1300 708 1369">&lt; 5 mcg/dL</p>	<p data-bbox="820 575 945 604"><b>General</b></p> <ul data-bbox="820 611 1205 896" style="list-style-type: none"> <li>• Perform routine history and assessment of physical and mental development.</li> <li>• Assess nutrition and risk for iron deficiency.</li> <li>• Consider lead exposure risks.</li> </ul> <p data-bbox="820 939 1103 968"><b>Blood Lead Levels</b></p> <ul data-bbox="820 975 1230 1339" style="list-style-type: none"> <li>• California regulations require testing at ages 1 and 2 years (up to 6 years if not tested at 2 years) if child is in a publicly funded program for low-income children, spends time at a pre-1978 place with deteriorated paint or recently renovated, or has</li> </ul>	<ul data-bbox="1256 582 1849 1382" style="list-style-type: none"> <li>• Comply with California 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.<sup>5</sup></li> <li>• Discuss hand to mouth activity, hand washing, and sources of lead: e.g. lead-contaminated paint, dust, and soil (particularly near busy roads), plumbing, a household member’s lead-related work, bullets, fishing sinkers; and also some: remedies, cosmetics, foods, spices, tableware, cookware, batteries, jewelry, toys and other consumer products.</li> </ul>

## BLOOD LEAD TEST AND ANTICIPATORY GUIDANCE

BLL <sup>2</sup>	EVALUATION AND TESTING	MANAGEMENT
<p>(continued)</p> <p>Initial BLL and routine retest may be capillary (CBLL) or venous (VBLL) <sup>3,4</sup></p> <p>Retest for identified risk must be venous<sup>3</sup></p>	<p>other lead exposure risks.<sup>5</sup></p> <ul style="list-style-type: none"> <li>• If screened early (before 12 months), retest in 3-6 months as risk increases with increased mobility.</li> <li>• Test anyone birth to 21 years when indicated by changed circumstances, identification of new risks, or at the request of a parent or guardian.</li> <li>• Follow-up with VBLL in 6-12 months if indicated.</li> <li>• See federal guides for Head Start<sup>6</sup> or refugees.<sup>7</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Discuss BLLs with family. Counsel on any risk factors identified.</li> <li>• Encourage good nutrition, especially iron, vitamin C, and calcium. Consider referral to the Supplemental Nutrition Program for Women, Infants, and Children (WIC).</li> <li>• Encourage participation in early enrichment activities.</li> <li>• <b>Chelation is not recommended in this BLL range.</b></li> </ul>
<p><b>5-9 mcg/dL</b></p> <p>Initial BLL may be capillary or venous</p> <p>Every retest must be venous<sup>3</sup></p>	<p><b>General – Evaluate as above AND</b></p> <ul style="list-style-type: none"> <li>• Take an environmental history to identify potential sources of exposure and provide preliminary advice on reducing/eliminating them.</li> <li>• Test for iron sufficiency (CBC, Ferritin, and CRP).</li> <li>• Perform structured developmental screening evaluations at periodic health visits as lead effects may manifest over years.</li> <li>• Evaluate risk to other children and pregnant and lactating women in the home.</li> </ul>	<p><b>Manage as above AND</b></p> <ul style="list-style-type: none"> <li>• Counsel on nutrition, iron, vitamin C, and calcium. Encourage taking high-iron and high-vitamin C foods together. Refer to WIC.</li> <li>• Treat iron insufficiency per AAP guidelines. Consider starting a multivitamin with iron.</li> <li>• Add notation of elevated BLL to child's medical record for future neurodevelopmental monitoring.</li> <li>• Refer to an early enrichment program, e.g. Early Start or Head Start.</li> <li>• Consider medical referral and testing for other children and pregnant and lactating women in the home.</li> <li>• Coordinate with local Childhood Lead Poisoning Prevention Program (CLPPP) or state CLPPB for outreach, education, and other services. See <a href="http://www.cdph.ca.gov/programs/CLPPB">www.cdph.ca.gov/programs/CLPPB</a> for</li> </ul>

## BLOOD LEAD TEST AND ANTICIPATORY GUIDANCE

BLL <sup>2</sup>	EVALUATION AND TESTING	MANAGEMENT
<p><b>5-9 mcg/dL</b> (continued) Initial BLL may be capillary or venous</p> <p><b>Every retest must be venous<sup>3</sup></b></p>	<p><b>Blood Lead Levels</b></p> <ul style="list-style-type: none"> <li>• Retest in 1-3 months to be sure BLL is not rising.</li> <li>• Then retest in 3 months and thereafter based on VBLL trend.</li> <li>• If retest is in another range, retest per that range.</li> </ul>	<p>state and local contact information</p> <ul style="list-style-type: none"> <li>• <b>Chelation is not recommended in this BLL range.</b></li> </ul>
<p><b>10-14 mcg/dL</b></p> <p>Initial BLL may be capillary or venous</p> <p><b>Every retest must be venous<sup>3</sup></b></p>	<p><b>General – Evaluate as above</b></p> <p><b>Blood Lead Levels</b></p> <ul style="list-style-type: none"> <li>• Retest in 1-3 months to be sure BLL is not rising.</li> <li>• To determine eligibility for full public health case management, retest after interval of 30 days (eligible if persistent in or above this range).</li> <li>• If BLLs are stable or decreasing, monitor initially with VBLLs every 3 months and thereafter based on VBLL trend. If retest is in another range, retest per that range.</li> </ul>	<p><b>Manage as above AND</b></p> <ul style="list-style-type: none"> <li>• If BLL is persistent in or above this range (30 days or more), contact the local CLPPP (or, if no local program, the state CLPPB) for full case management services, without charge or means test, for children aged birth to 21 years (nurse case management, environmental investigation, and recommendations for remediation of lead sources).</li> <li>• The state CLPPB is available for further consultation: (510) 620-5600. See footnote for other lead-knowledgeable agencies.<sup>8</sup></li> <li>• <b>Chelation is not recommended in this BLL range.</b></li> </ul>

## BLOOD LEAD TEST AND ANTICIPATORY GUIDANCE

BLL <sup>2</sup>	EVALUATION AND TESTING	MANAGEMENT
<p><b>15-19 mcg/dL</b></p> <p>Initial BLL may be capillary or venous</p> <p><b>Every retest must be venous<sup>3</sup></b></p>	<p><b>General – Evaluate as above AND</b></p> <ul style="list-style-type: none"> <li>• Consider abdominal X-ray if possible ingestion of leaded materials or history of pica/excessive mouthing.</li> </ul> <p><b>Blood Lead Levels</b></p> <ul style="list-style-type: none"> <li>• Retest in 1-4 weeks to be sure BLL is not rising.</li> <li>• Then, if stable or decreasing, monitor initially with VBLLs every 1-3 months and thereafter based on VBLL trend.</li> <li>• If retest is in another range, retest per that range.</li> </ul>	<p><b>Manage as above AND</b></p> <ul style="list-style-type: none"> <li>• Consider gut decontamination if foreign bodies consistent with lead are visualized on X-ray.</li> <li>• 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.</li> <li>• 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.</li> <li>• <b>Chelation is not recommended in this BLL range.</b></li> </ul>
<p><b>20-44 mcg/dL</b></p> <p>Initial BLL may be capillary or venous</p> <p><b>Every retest must be venous<sup>3</sup></b></p>	<p><b>General – Evaluate as above</b></p> <p><b>Blood Lead Levels</b></p> <ul style="list-style-type: none"> <li>• Retest in 1-4 weeks to be sure BLL is not rising (the higher the BLL, the sooner the retest).</li> <li>• Then, if stable or decreasing, monitor initially with VBLLs every 2-4 weeks and thereafter based on VBLL trend.</li> <li>• If retest is in another range, retest per that range.</li> </ul>	<p><b>Manage as above AND</b></p> <ul style="list-style-type: none"> <li>• Consider referral to California Children Services (CCS). Requires confirmed venous BLL equal to or greater than 20 mcg/dL.<sup>9</sup></li> <li>• Consider referral for medical nutrition therapy.<sup>10</sup></li> <li>• <b>Chelation is not typically initiated in this BLL range.</b></li> </ul>



## BLOOD LEAD TEST AND ANTICIPATORY GUIDANCE

BLL <sup>2</sup>	EVALUATION AND TESTING	MANAGEMENT
<p><b>45-69 mcg/dL</b></p> <p>Initial BLL may be capillary or venous</p> <p><b>Every retest must be venous<sup>3</sup></b></p>	<p><b>URGENT</b></p> <p><b>General – Evaluate as above AND</b></p> <ul style="list-style-type: none"> <li>• <b>OBTAIN ABDOMINAL X-RAY.</b></li> </ul> <p><b>Blood Lead Levels</b></p> <ul style="list-style-type: none"> <li>• <b>Confirm initial BLL with repeat VENOUS BLL:</b> <ul style="list-style-type: none"> <li>– <b>WITHIN 48 HOURS</b> if BLL is 45-59 mcg/dL.</li> <li>– <b>WITHIN 24 HOURS</b> if BLL is 60-69 mcg/dL.</li> </ul> </li> <li>• Confirmatory venous BLL and other medically appropriate actions must occur <b>BEFORE</b> initiating chelation.</li> <li>• Monitor response to chelation with VBLLs.</li> <li>• Follow-up with VBLLs every 2-4 weeks (more frequently if status requires) until trend is downward or stable or as trend indicates.</li> <li>• Consider modifying protocol if VBLLs are not decreasing as expected or remain chronically elevated, e.g. from a retained bullet.</li> <li>• If retest is in another range, retest per that range.</li> </ul>	<p><b>URGENT</b></p> <p><b>Manage as above AND</b></p> <ul style="list-style-type: none"> <li>• Consider chelation.</li> <li>• Evaluate whether hospitalization is needed to reduce lead exposure and achieve compliance with treatment protocols.</li> <li>• Immediately notify local CLPPP or state CLPPB.</li> </ul> <p><b>Chelation Therapy</b></p> <ul style="list-style-type: none"> <li>• <b>Consult with a physician experienced in managing chelation.</b></li> <li>• Perform gut decontamination, if indicated, <b>BEFORE</b> chelation.</li> <li>• Consider one of two chelating agents: <ul style="list-style-type: none"> <li>– Succimer per outpatient protocol; give on inpatient basis if compliance or exposure reduction cannot otherwise be assured,</li> <li>– <b>OR</b> CaNa<sub>2</sub>EDTA per hospital protocol.</li> </ul> </li> <li>• <b>* CAUTION: USE ONLY <u>CALCIUM Na<sup>2</sup>EDTA</u>.</b><sup>11</sup></li> <li>• Very high BLLs have been associated with renal tubular dysfunction. If using potentially nephrotoxic chelating agents (e.g. CaNa<sub>2</sub>EDTA), <b>TEST RENAL FUNCTION BEFORE AND DURING TREATMENT.</b><sup>12</sup></li> <li>• Repeat treatment cycles may be needed due to blood lead rebound.</li> </ul>

## BLOOD LEAD TEST AND ANTICIPATORY GUIDANCE

BLL <sup>2</sup>	EVALUATION AND TESTING	MANAGEMENT
<p><b>≥ 70 mcg/dL</b></p> <p>Initial BLL may be capillary or venous</p> <p>Every retest must be venous<sup>3</sup></p>	<p><b>MEDICAL EMERGENCY</b>  <b>General – Evaluate as 45-69 range.</b></p> <ul style="list-style-type: none"> <li>• <b>OBTAIN ABDOMINAL X-RAY.</b></li> </ul> <p><b>Blood Lead Levels</b></p> <ul style="list-style-type: none"> <li>• <b>IMMEDIATELY confirm initial BLL with repeat VENOUS BLL.</b></li> <li>• Confirmatory venous BLL and other medically appropriate actions must occur <b>BEFORE</b> initiating chelation.</li> <li>• Monitor response during chelation with VBLLs.</li> <li>• Follow-up with VBLLs every 2-4 weeks (more frequently if status requires) until trend is downward or stable or as trend indicates.</li> <li>• Consider modifying protocol if VBLLs are not decreasing as expected or remain chronically elevated, e.g. from a retained bullet.</li> <li>• If retest is in another range, retest per that range.</li> </ul>	<p><b>MEDICAL EMERGENCY</b>  <b>Manage as above AND</b></p> <ul style="list-style-type: none"> <li>• If <b>BLL is confirmed</b>, hospitalize to stabilize, chelate, reduce lead exposure, and monitor progress.</li> <li>• Immediately notify local CLPPP or state CLPPB.</li> </ul> <p><b>Chelation Therapy</b></p> <ul style="list-style-type: none"> <li>• <b>Consult with physician experienced in managing chelation.</b></li> <li>• Perform gut decontamination, if indicated, <b>BEFORE</b> chelation.</li> <li>• <b>CAUTION:</b> If using CaNa<sup>2</sup>EDTA with dimercaprol (BAL) for chelation: <ul style="list-style-type: none"> <li>– <b>Use only <u>CALCIUM</u> Na<sup>2</sup>EDTA.</b><sup>11</sup></li> <li>– <b>Assess for peanut allergy</b> (BAL is suspended in peanut oil).</li> </ul> </li> <li>• Very high BLLs have been associated with renal tubular dysfunction. If using potentially nephrotoxic chelating agents (e.g. CaNa<sup>2</sup>EDTA), <b>TEST RENAL FUNCTION BEFORE AND DURING TREATMENT.</b><sup>12</sup></li> <li>• Repeat treatment cycles may be needed, due to blood lead rebound.</li> </ul>

## **Contacts/Questions:**

California Department of Public Health  
Childhood Lead Poisoning Prevention Branch

(510) 620-5600

<https://www.cdph.ca.gov/programs/clppb>

# PCP Resources Available:

- CenCal Health's Lead Screening Webpage
  - Health Promotion Patient Brochures
  - Pediatric Lead Screening Tips
  - Parental Refusal Form
- Gaps in Care Reports
- Members due for Lead Screening Reports

<https://www.cencalhealth.org/providers/care-guidelines/epsdt-services/lead-screening/>

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Providers > Care Guidelines > EPSDT Services > Lead Screening

## In This Section

- Care Guidelines
- Preventive Health Guidelines
- Clinical Guidelines
- > EPSDT Services
- Lead Screening

## Lead Screening

### Protocols and Tips for Pediatric Lead Screening

Protocols for lead testing:

- All CenCal Health members must be given a blood lead test at age 12 months and age 24 months at minimum. Source: California Department of Public Health
- Provide the patient's parent or guardian with anticipatory guidance/health education material about lead exposure screening (download one here)
- If a lead test is not administered, or if a parent declines/refuses lead test, document this in patient's chart.
  - Download a refusal form template
- Report any abnormal lead tests to your County's Department of Public Health and the California Lead Poisoning Prevention Branch

**DOWNLOAD**  
a printable version of these tips

### Pediatric Lead Screening

PROTOCOLS FOR LEAD TESTING:

- 1 All CenCal Health members must be given a blood lead test at age 12 months and age 24 months at minimum.
- 2 Provide an anticipatory guidance and health education material about lead exposure screening.
- 3 If a lead test is not administered, or if a parent declines/refuses a lead test, document this in your patient's chart.
- 4 Report any abnormal lead tests to your county's Department of Public Health and the California Lead Poisoning Prevention Branch (CLPPB).

TIPS FOR YOUR PRACTICE:

- 1 Include an alert in your EHR system or the patient's chart to screen for lead exposure at 12 & 24 months.
- 2 Discuss the importance of lead exposure screening with parents at each well-child visit before 3 years of age.
- 3 Offer point-of-care lead testing to your office.

Utilize Provider Portal Reports to obtain a list of your patients due for lead testing.

[cencalhealth.org/providers/care-guidelines/epsdt-services/lead-screening](https://www.cencalhealth.org/providers/care-guidelines/epsdt-services/lead-screening)



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