Recommended Chelation Protocol for Children With BLLs ≥45 µg/dL

Before Providing Chelation Therapy

- Confirm the blood lead level (BLL) ≥45 µg/dL with a venous specimen processed as an emergency test unless symptoms of encephalopathy are present.
- Obtain an abdominal x-ray to look for lead solid ingestion; if radio-opaque particles are found or recent ingestion is witnessed, use a cathartic.
- **Use this protocol in consultation with a provider with expertise in treating lead intoxication.** Inform the New York City Department of Health and Mental Hygiene (NYC Health Department) of the hospital admission by calling 646-632-6002. The NYC Health Department can provide referrals to providers with expertise in treating lead intoxication. For consultations on evenings or weekends, call Poison Control at 212-POISONS.
- Arrange hospitalization and chelation therapy at a facility with expertise in treating lead-poisoned children.
- Provide chelation therapy in, and discharge child to, a lead-safe environment. Do not discharge until the NYC Health Department inspects the home.

Chelation Therapy For Children with Venous BLLs ≥45 µg/dL[1-6]

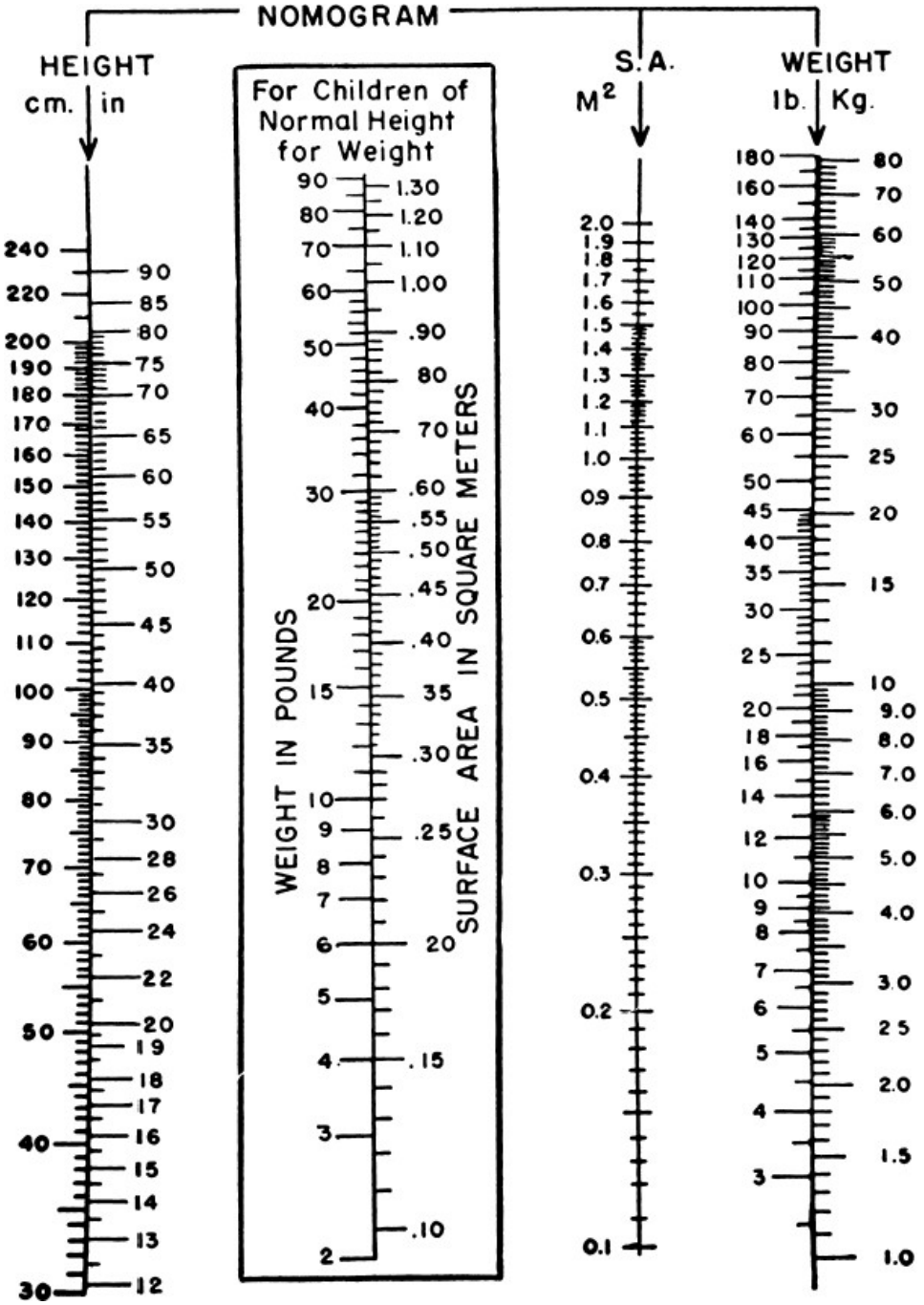
BLLs (µg/dL)	Medication, Dosage,[a] and Administration	Consider While on Chelation	Follow-up
<45	Chelation therapy not routinely recommended		See reverse for **Recommended Follow-up Blood Lead Test Schedule for Children**
45 to <70	**Succimer (2,3-meso-dimercaptosuccinic acid, DMSA):** • 1050 mg succimer / m^2 / 24 hours[a] ÷ q8 hours PO x 5 days; round dose to nearest 100 mg/day, and then ÷ 100-mg capsules as evenly as possible for q8-hour dosing schedule. • On discharge, continue succimer 700 mg / m^2 / 24 hours[a] ÷ q12 hours x 14 days.[b]	• Monitor for anemia, neutropenia, and liver toxicity. • Capsules can be opened and beads sprinkled on a small amount of low-calcium food or put in a spoon followed by drinking juice.	• Schedule weekly health care visits to monitor compliance and signs of toxicity. • Monitor BLLs weekly until level stabilizes (2 consecutive BLLs +/- 10% of each other), then follow **Recommended Follow-up Blood Lead Test Schedule for Children** (see reverse). • Monitor erythrocyte protoporphyrin (EP) level to help assess timing of exposure.[d]
	OR (alternating treatment if succimer not tolerated, ie, vomiting medication) • **$CaNa_2EDTA$ (calcium disodium edetate, calcium disodium versenate):** ◦ 250 mg $CaNa_2EDTA$ / m^2 q6 hours IV infused slowly over an hour x 5 days	• Maintain urine specific gravity below 1.010. • Discontinue any iron. • Monitor for kidney and liver toxicity. Reduce dose if renal insufficiency.	• Monitor BLLs biweekly (typically for 6-12 weeks) until level stabilizes, then follow **Recommended Follow-up Blood Lead Test Schedule for Children** (see reverse). • Monitor EP level to help assess timing of exposure.[d]
≥70 and no symptoms of encephalopathy	**Combine succimer and $CaNa_2EDTA$[c]** • 1050 mg DMSA / m^2 / 24 hours[a] ÷ q8 hours PO x 5 days; round dose to nearest 100 mg/day and then ÷ 100-mg capsules as evenly as possible for q8-hour dosing schedule ***AND*** (beginning 2 hours after first dose of succimer) • 250 mg $CaNa_2EDTA$ / m^2 q6 hours IV infused slowly over an hour x 5 days • On discharge, continue succimer 700 mg / m^2 / 24 hours[a] ÷ q12 hours x 14 days[b]	• Maintain urine specific gravity below 1.010. • Discontinue any iron. • Monitor for anemia, neutropenia, and kidney and liver toxicity. • If renal insufficiency, reduce $CaNa_2EDTA$ dose.	• Schedule weekly health care visits to monitor compliance and signs of toxicity. • Monitor BLLs weekly until level stabilizes, then follow **Recommended Follow-up Blood Lead Test Schedule for Children** (see reverse). • Monitor EP level to help assess timing of exposure.[d]
≥70 and symptoms of encephalopathy	**Combine succimer and $CaNa_2EDTA$[c]** • 1050 mg succimer / m^2 / 24 hours[a] ÷ q8 hours PO x 5 days; round dose to nearest 100 mg/day and then ÷ 100-mg capsules as evenly as possible for q8-hour dosing schedule ***AND*** (beginning 2 hours after first dose of succimer) • 1500 mg $CaNa_2EDTA$ / m^2 / 24 hours[a] (2 g / 24 hours max) as continuous infusion x 5 days • On discharge, consider continuing succimer 700 mg / m^2 / 24 hours[a] ÷ q12 hours x 14 days[b]	• Maintain urine specific gravity below 1.010. • Discontinue any iron. • Monitor for anemia, neutropenia, and kidney and liver toxicity.	• Retest 3 days after chelation course completed; if BLL ≥45 µg/dL, provide second chelation course. • Monitor BLLs biweekly until level stabilizes, then follow **Recommended Follow-up Blood Lead Test Schedule for Children** (see reverse). • Monitor EP level to help assess timing of exposure.[d]

[a]For children aged <5 years, body surface area calculations typically give higher doses, which are recommended (see reverse for the Body Surface Area Nomogram); [b]if exposure source identified and not accessible, an additional 14 days of q12-hour dosing reduces BLL rebound after therapy ends; [c]found effective and safe in this range in a limited number of children; [d]the BLL reflects more recent exposure to lead, while the EP reflects more chronic exposure (once elevated, the EP remains elevated for several months even after exposure has ceased and the BLL has fallen)

1. Adapted from Beers MH, Berkow R, eds. *The Merck Manual of Diagnosis and Therapy,* 17th ed.1999:chap 263, table 8; 2. WHO guideline 2021 for clinical management of exposure to lead https://www.who.int/publications/i/item/9789240037045; 3. Markowitz M. Lead poisoning. An update. *Pediatr Rev.* 2021;42(6):302-315;; 4. Chemet: Succimer Recordati Rare Dis Package Insert Jan 2023; 5. Edetate Calcium Disodium Casper Pharma LLC Package Insert April 2023; 6. Calello DP, Henretig FM. A29 Succimer and A30. In: Nelson LS, Howland MA, Lewin NA, Smith SW, Goldfrank LRd, Hoffman RS. Goldrank's Toxicologic Emergencies, 11 ed. 2019;McGraw Hill. Chap 93.

Updated 2024

Body Surface Area Nomogram[a]



[a]Reprinted from Park MK. *Park's Pediatric Cardiology for Practitioners*. 4th ed. 2014:476. Copyright 2005. Used with permission from Elsevier.

Recommended Follow-up Blood Lead Test Schedule for Children

Fingerstick BLLs ≥3.5 µg/dL		Venous BLLs ≥3.5 µg/dL		
Capillary Test Result (µg/dL)	**Confirmatory Venous Test**	**Venous BLL (µg/dL)**	**Early Follow-up Test (first 2 to 4 tests after identification)**	**Late Follow-up Test (after BLL begins to decline)**
3.5 to <10	Within 3 months[a]	**3.5 to <10**	1 to 3 months[a]	6 to 9 months
10 to <20	Within 1 month	**10 to <20**	1 to 3 months[a]	3 to 6 months
20 to <45	Within 2 weeks	**20 to <45**	2 weeks to 1 month	1 to 3 months
≥45	Immediately	**≥45**	As soon as possible	Chelation with follow-up

[a]Health care providers may choose to repeat BLLs within 1 month for patients newly identified with an elevated BLL to confirm that BLL is not rising rapidly