

Recommended Chelation Protocol for Children With BLLs ≥ 45 $\mu\text{g}/\text{dL}$

Before Providing Chelation Therapy

- Confirm the blood lead level (BLL) ≥ 45 $\mu\text{g}/\text{dL}$ 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.
- 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 New York City (NYC) Health Department inspects the home.
- Inform the NYC Health Department of hospital admission by calling 646-632-6002. The Health Department can provide referrals to providers with expertise in treating lead intoxication and referrals to temporary lead-safe housing.

Chelation Therapy For Children with Venous BLLs ≥ 45 $\mu\text{g}/\text{dL}$ ¹⁻³

BLLs ($\mu\text{g}/\text{dL}$)	Agent, Dosage, ^a and Administration	Special Considerations	Follow-up
<45	Chelation therapy not routinely recommended		See reverse for Recommended Follow-up Blood Lead Test Schedule for Children
45 to <70	<p>DMSA (succimer, 2,3-meso-dimercaptosuccinic acid):</p> <ul style="list-style-type: none"> • 1050 mg DMSA / m^2 / 24 hours^a \div q8 hours PO x 5 days; round dose to nearest 100 mg/day, and then \div 100-mg capsules as evenly as possible for q8-hour dosing schedule. • On discharge, continue DMSA 700 mg / m^2 / 24 hours^a \div q12 hours x 14 days.^b <p>OR (alternating treatment if DMSA not tolerated, ie, vomiting medication)</p> <ul style="list-style-type: none"> • CaNa₂EDTA (calcium disodium edetate, calcium disodium versenate): <ul style="list-style-type: none"> ◦ 1000 mg CaNa₂EDTA / m^2 / 24 hours^a \div q6 hours IV infused slowly x 5 days 	<ul style="list-style-type: none"> • Monitor for anemia, neutropenia, and hepatic toxicity. 	<ul style="list-style-type: none"> • 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 erythrocyte protoporphyrin (EP) level to help assess timing of exposure.^c
≥ 70 and no symptoms of encephalopathy	<p>Combine DMSA and CaNa₂EDTA^c</p> <ul style="list-style-type: none"> • 1050 mg DMSA / m^2 / 24 hours^a \div q8 hours PO x 5 days; round dose to nearest 100 mg/day and then \div 100-mg capsules as evenly as possible for q8-hour dosing schedule <p>AND (beginning 2 hours after first dose of DMSA)</p> <ul style="list-style-type: none"> • 1000 mg CaNa₂EDTA / m^2 / 24 hours^a \div q6 hours IV infused slowly x 5 days • On discharge, continue DMSA 700 mg / m^2 / 24 hours^a \div q12 hours x 14 days^b 	<ul style="list-style-type: none"> • Maintain urine specific gravity below 1.015. • Discontinue any iron. • Monitor for anemia, neutropenia, and renal and hepatic toxicity. 	<ul style="list-style-type: none"> • 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.^c
≥ 70 and symptoms of encephalopathy	<p>Combine BAL (British anti-Lewisite, dimercaprol) and CaNa₂EDTA</p> <ul style="list-style-type: none"> • 450 mg BAL / m^2 / 24 hours^a \div q4 hours IM x 3-5 days (number of days on BAL based on clinical improvement) <p>AND (beginning 4 hours after first dose of BAL)</p> <ul style="list-style-type: none"> • 1500 mg CaNa₂EDTA / m^2 / 24 hours^a (2 g / 24 hours max) as continuous infusion x 5 days 	<ul style="list-style-type: none"> • Monitor mental status. • Screen for peanut allergy and G6PD (glucose-6-phosphate dehydrogenase) deficiency.^d • Pretreat with antihistamines. • Discontinue any iron. • Monitor for neutropenia, and renal and hepatic toxicity. 	<ul style="list-style-type: none"> • Retest 3 days after chelation course completed; if BLL ≥ 45 $\mu\text{g}/\text{dL}$, 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.^c

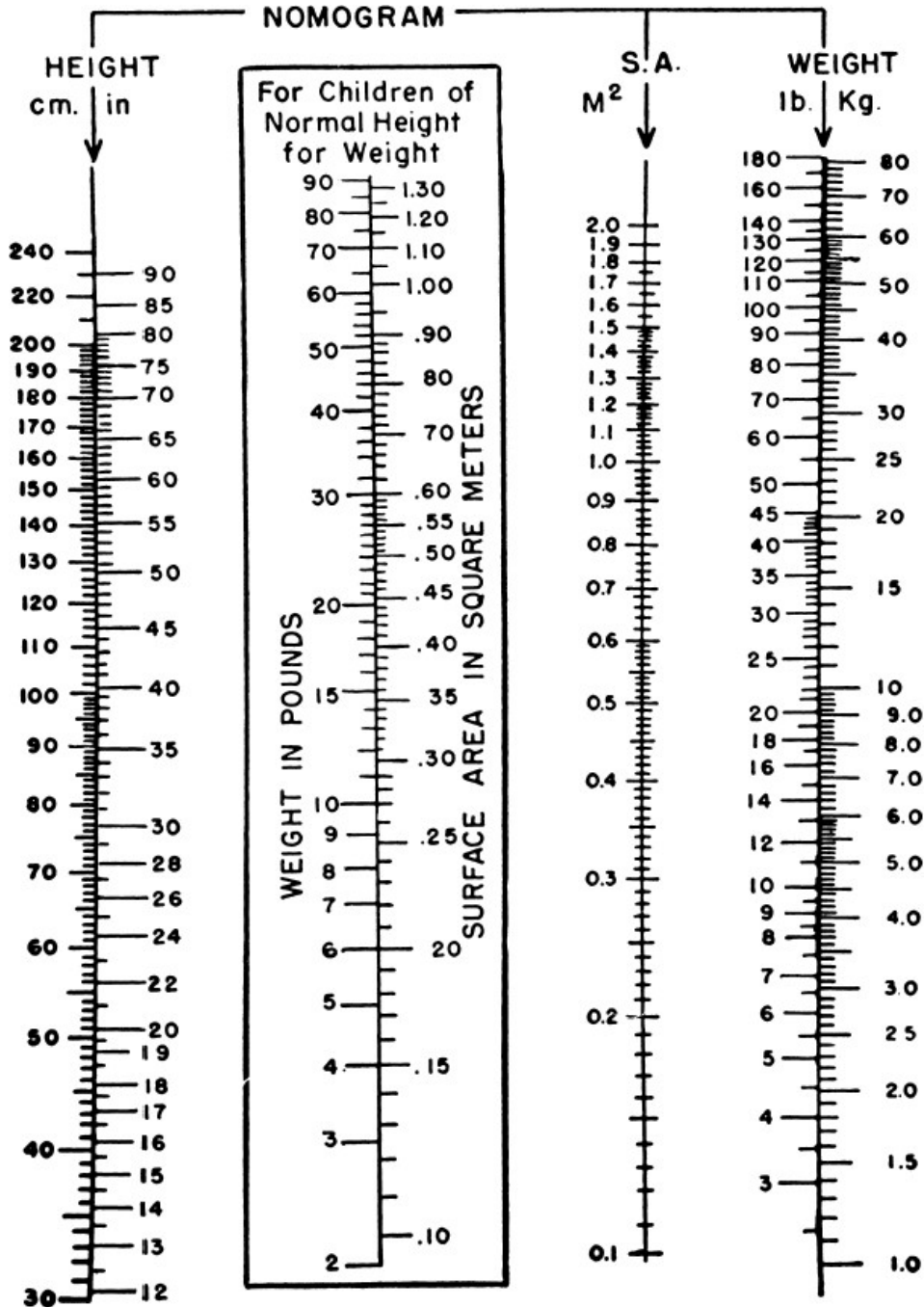
^aFor children aged <5 years, body surface area calculations typically give higher doses, which are recommended (see reverse for the **Body Surface Area Nomogram**); ^badditional 14 days of q12-hour dosing reduces BLL rebound after therapy ends; ^cfound effective and safe in this range in a limited number of children; ^dBAL is prepared in peanut oil and has also caused hemolysis in patients with G6PD; ^ethe 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. Rhoads GG, Rogan WJ. *Pediatrics*.1996;98(1):162-163.

3. Besunder JB, et al. *J Pediatr*. 1997;130(6):966-971.

Body Surface Area Nomogram^a



^aReprinted 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 $\mu\text{g}/\text{dL}$		Venous BLLs ≥ 3.5 $\mu\text{g}/\text{dL}$		
Capillary Test Result ($\mu\text{g}/\text{dL}$)	Confirmatory Venous Test	Venous BLL ($\mu\text{g}/\text{dL}$)	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

^aHealth 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