

RECOMMENDED CHELATION PROTOCOL FOR CHILDREN WITH BLLS $\geq 45\mu\text{g/dL}$ NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE

BEFORE PROVIDING CHELATION THERAPY:

- Confirm blood lead level (BLL) $\geq 45\mu\text{g/dL}$ with venous specimen processed as emergency test unless symptoms of encephalopathy present.
- Obtain abdominal x-ray to look for lead solid ingestion; if radio-opaque particles found or recent ingestion witnessed, use cathartic.
- Arrange hospitalization and chelation therapy at a facility with expertise in treating lead-poisoned children.
- Child must receive chelation therapy in, and be discharged to, a lead-safe environment. Do not discharge until DOHMH inspects the home.
- Inform NYC DOHMH of hospital admission by calling (212) 676-6100. DOHMH can provide same-day BLL processing, referrals to facilities/providers with expertise in treating lead-poisoning and referrals to temporary lead-safe housing.

CHELATION THERAPY FOR CHILDREN WITH VENOUS BLLS $\geq 45\mu\text{g/dL}$ ¹

BLL $\mu\text{g/dL}$	Agent, Dosage,* and Administration	Special Considerations	Follow-up
<45	Chelation therapy not routinely recommended		
45-69	<ul style="list-style-type: none"> • DMSA (succimer, 2,3-meso-dimercaptosuccinic acid) <ul style="list-style-type: none"> ▪ 1050mg DMSA / m^2 / 24 hours* \div q8 hours PO x 5 days. Round dose to nearest 100mg/day and then \div 100mg capsules as evenly as possible for q8 hour dosing schedule. ▪ On discharge continue DMSA 700mg/ m^2/ 24 hours *\div q12 hours x 14 days.[†] 	<ul style="list-style-type: none"> • Monitor for anemia, neutropenia and hepatic toxicity. 	<ul style="list-style-type: none"> • Schedule weekly healthcare visits to monitor compliance and signs of toxicity. • Monitor BLLs weekly until level stabilizes, then follow blood test schedule in CHI Table 4.² • Monitor EP level to help assess timing of exposure.
	<p><i>OR (alternative treatment if DMSA not tolerated i.e. vomiting medication)</i></p> <ul style="list-style-type: none"> • CaNa₂EDTA (calcium disodium edetate, calcium disodium versenate) <ul style="list-style-type: none"> ▪ 1000mg CaNa₂EDTA / m^2 / 24 hours *\div q6 hrs IV infused slowly x 5 days. 	<ul style="list-style-type: none"> • Maintain urine specific gravity below 1.015. • Discontinue any iron. • Monitor for renal and hepatic toxicity. 	<ul style="list-style-type: none"> • Monitor BLLs biweekly until level stabilizes, then follow blood test schedule in CHI Table 4.² • Monitor EP level to help assess timing of exposure.
≥ 70 and no symptoms of encephalopathy	<ul style="list-style-type: none"> • Combine DMSA and CaNa₂EDTA.[‡] <ul style="list-style-type: none"> ▪ 1050mg DMSA / m^2 / 24 hours* \div q8 hours PO x 5 days. Round dose to nearest 100mg/day and then \div 100mg capsules as evenly as possible for q8 hour dosing schedule. <i>AND (beginning two hours after 1st dose of DMSA)</i> <ul style="list-style-type: none"> ▪ 1000mg CaNa₂EDTA / m^2 / 24 hours* \div q6 hours IV infused slowly x 5 days. ▪ On discharge, continue DMSA 700mg/ m^2/ 24 hours* \div q12 hours x 14 days.[†] 	<ul style="list-style-type: none"> • Maintain urine specific gravity below 1.015. • Discontinue any iron. • Monitor for anemia, neutropenia, renal and hepatic toxicity. 	<ul style="list-style-type: none"> • Schedule weekly healthcare visits to monitor compliance and signs of toxicity. • Monitor BLLs weekly until level stabilizes, then follow blood test schedule in CHI Table 4.² • Monitor EP level to help assess timing of exposure.
≥ 70 and symptoms of encephalopathy	<ul style="list-style-type: none"> • Combine BAL (British anti-Lewisite, dimercaprol) and CaNa₂EDTA <ul style="list-style-type: none"> ▪ 450mg BAL / m^2 / 24 hours* \div q4 hours IM x 3-5 days (number of days on BAL based on clinical improvement). <i>AND (beginning 4 hours after 1st dose of BAL)</i> <ul style="list-style-type: none"> ▪ 1500mg CaNa₂EDTA / m^2 / 24 hours* (2g / 24 hours max) as continuous infusion x 5 days. 	<ul style="list-style-type: none"> • Monitor mental status. • Screen for peanut allergy and G6PD deficiency.[§] • Pretreat with antihistamines. • Discontinue any iron. • Monitor for neutropenia, renal and hepatic toxicity. 	<ul style="list-style-type: none"> • Retest 3 days after chelation course completed; If BLL $\geq 45\mu\text{g/dL}$ provide 2nd chelation course. • Monitor BLLs biweekly until level stabilizes, then follow blood test schedule in CHI Table 4.² • Monitor EP level to help assess timing of exposure.

*For children < 5 years of age, body surface area calculations typically give higher doses, which are recommended.³ Calculate body surface area using the "Body Surface Area Nomogram" attached.

†Additional 14 days of q 12 hour dosing reduces BLL rebound after therapy ends.

‡ Found effective & safe in this range in a limited number of children.⁴

§BAL is prepared in peanut oil. BAL has also caused hemolysis in patients with G6PD.

|| The BLL reflects more recent exposure to lead, while the erythrocyte protoporphyrin level (EP) reflects more chronic exposure. Once elevated, the EP remains elevated for several months even after exposure has ceased and the BLL has fallen.

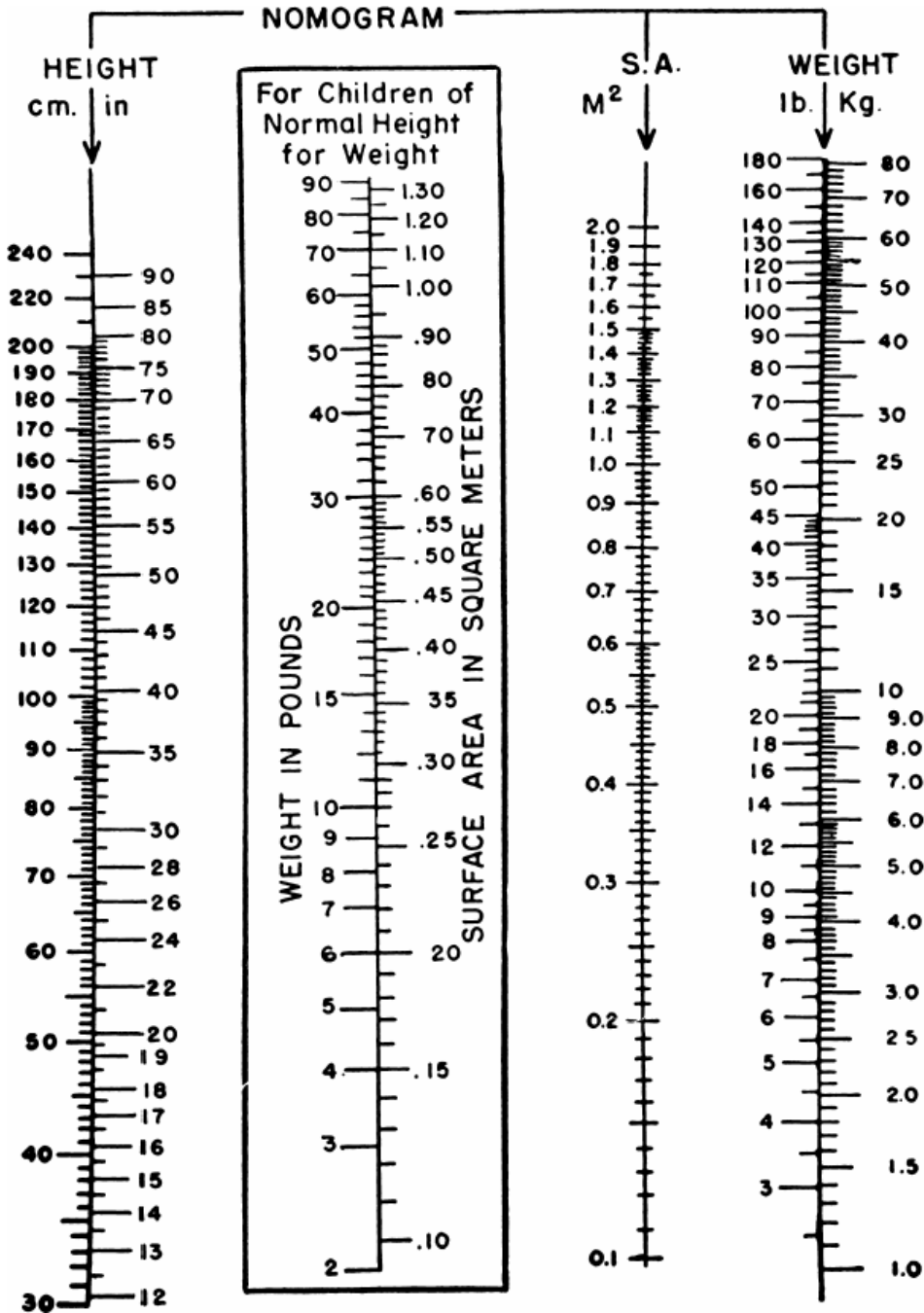
1. Based on: Dosage schedule for chelating agents, Table 263-8, ch. 263, Injuries, Poisoning, and Cardiopulmonary Resuscitation. The Merck Manual of Diagnosis and Therapy.

2. Ehrlich J, Nagin D, Greene D, Clarke N, Leighton J. Lead poisoning: prevention, identification, and management. *City Health Information* (CHI). 2007;26(3): 15-22.

3. Rhoads GC, Rogan WJ. Treatment of lead-exposed children. *Pediatrics*. 1996; 98: 162-163.

4. Besunder JB, Super DM, Anderson RL. Comparison of dimercaptosuccinic acid and calcium disodium ethylenediaminetetraacetic acid versus dimercaptopropanol and ethylenediaminetetraacetic acid in children with lead poisoning. *J Pediatr*. 1997 Jun; 130(6):966-71.

Body Surface Area Nomogram*



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