

## CHILDHOOD LEAD POISONING TREATMENT GUIDELINES

### GUIDELINE #2: INPATIENT CHELATION WITH CHEMET (SUCCIMER, DMSA)

#### CRITERIA FOR TREATMENT:

This protocol is appropriate for children with confirmed venous blood lead levels (VPb) **45-69 ug/dL** if the following conditions are met:

- 1) The patient is **asymptomatic**. If the patient has signs of acute encephalopathy treatment guideline #4 is recommended. A careful **history** should be taken for possible signs or symptoms of acute toxicity. **Symptoms** of lead poisoning include the following:
  - GI: Anorexia, constipation, abdominal pain, vomiting
  - CNS: Irritability (may be subtle), lethargy, change in sleep or behavior patterns, headache, decreased play, ataxia, decreased coordination, vomiting
  - Severe involvement: Seizures, coma, hypertension, papilledema, cranial nerve paralysis
- 2) **Absence of a history of allergy** to Chemet
- 3) Absence of pre-existing renal or hepatic disease
- 4) **No treatment with other chelating agents within the past 2 weeks**. It is best to wait 2-4 weeks between consecutive courses of Chemet.
- 5) An **absolute neutrophil count  $\geq$  1200 prior to the initiation of treatment**
- 6) Arrangements for the completion of Chemet chelation therapy as an outpatient should be explored prior to initiation of inpatient treatment. (See Guideline #1)
- 7) Phone inpatient lab and pharmacy to assure adequate access to lab testing requirements and medications.

#### ADVERSE EFFECTS OF CHEMET (SUCCIMER):

The most common adverse effects are gastrointestinal, including nausea, vomiting, diarrhea, appetite loss, and loose stools. Rashes, some necessitating discontinuation of therapy, have been reported in about 4% of patients, primarily in adults. Mild, transient elevations of serum transaminases (ALT, AST) have been observed in 6-10% of patients, primarily in adults. Rarely, proteinuria has been described. Mild to moderate neutropenia has been noted, requiring close monitoring of the ANC (absolute neutrophil count) during treatment and the need for medical evaluation if signs or symptoms of infection develop.

Algorithms are not intended to replace providers' clinical judgement or to establish a single protocol. Some clinical problems may not be adequately addressed in this guideline. As always, clinicians are urged to document management strategies.

Last revised March 2020, by Dr. Jennifer A. Jewell

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**PRIOR TO TREATMENT:**

- 1) A careful **history and physical exam** should be conducted to verify that the patient is **asymptomatic**.
- 2) **Exposure history**, including occupational history of parents, should be obtained and documented.
- 3) Obtain **BP**. Confirm **height** and **weight** (for dosing).
- 4) **Laboratory**: The following baseline laboratory data should be obtained:
  - Repeat VPb – (Venous Lead): 1 ml in lavender micro
  - ZPP – (Zinc Protoporphyrin): 0.2 ml in lavender micro
  - CMP: 0.6 ml in mint green micro
  - CBC with differential (calculate ANC): 0.5 ml in lavender micro
  - Urinalysis (for protein)
  - Iron studies – Iron, Ferritin, TIBC: 3 ml in gold
- 5) **Radiologic Evaluation**:  
Obtain an abdominal x-ray on any child with newly diagnosed lead poisoning or any child with known lead poisoning with an increase in lead level not consistent with a post-chelation rebound. X-ray evidence of lead in the gastrointestinal tract, particularly in the stomach and small intestine, indicates the need for gut decontamination. Lead has no appreciable absorption in the colon or rectum.
- 6) All families should be referred for a **social work assessment** (for housing assistance)

**TREATMENT:**

- 1) If there is x-ray evidence of lead in the gastrointestinal tract, GI decontamination should be carried out. Polyethylene glycol solution (GoLytely) can be used for lead densities in the stomach and/or small intestine. Lead has no appreciable absorption in the colon or rectum. The dose of GoLytely is 20-40 ml/kg/hr up to a maximum of 1000 ml per hour via nasogastric tube for a minimum of 4 hours and/or until the patient has a bowel movement.
- 2) Begin Chemet at 10 mg/kg (rounded to the nearest 100 mg) PO TID (see dosing schedule below) for 5 days, then BID for 14 days (as an outpatient). The drug comes in 100 mg capsules that may be opened and sprinkled on food or in beverages; ice cream works well.

**DOSING (TID x 5 days; then, BID x 14 days)**

<u>LBS</u>	<u>KG</u>	<u>DOSE (MG)</u>	<u>NUMBER OF CAPSULES/DOSE</u>
18-35	8-15	100	1
36-55	16-23	200	2
56-75	24-34	300	3
76-100	35-44	400	4
≥ 100	≥ 45	500	5

- 3) Iron should not be administered simultaneously with Chemet. If indicated for iron deficiency anemia, it may be given 2-3 hours after the dose.
- 4) Observe for any side effects of treatment as listed above. If fever or signs of infection are noted, check CBC with differential; consider withholding treatment for ANC < 1200.

**TREATMENT, Continued:**

5) On DAYS 6 and 20 of therapy, the following labs should be repeated.

- VPb: 1 ml in lavender micro
- ZPP: 0.2 ml in lavender micro
- CMP: 0.6 ml in mint green micro
- CBC with differential: 0.5 ml in lavender micro. *Calculate ANC and consider withholding treatment for ANC <1200.*
- Urinalysis (for protein)

**CRITERIA FOR DISCHARGE:**

- 1) **The child must be discharged to a lead safe environment.** The lead status of the home will be determined for Maine patients by the Maine Childhood Lead Poisoning Prevention Program (MCLPPP), (207) 287-4311, or for New Hampshire patients by the Health Homes and Lead Poisoning Prevention Program (HHLPPP), (603) 271-4507 and (800) 897-5323.
- 2) The parent or caregiver must be able to comply with the treatment protocol.
- 3) The parent or caregiver must be able to attend follow-up appointments and laboratory testing.

**FOLLOW-UP:**

- 1) The first follow-up visit should be one week after chelation has been completed, and, then, again at two weeks after chelation has been completed. Follow-up should continue at monthly intervals until the VPb is < 15 ug/dL, then, every two to three months.
- 2) The following labs should be obtained at each follow-up visit
  - VPb: 1 ml in lavender micro
  - ZPP: 0.2 ml in lavender micro

*Rechelation is indicated if at any time after 2 weeks, the VPb is > 45 ug/dL, or > 40 ug/dL in the face of a large lead burden (elevated ZPP). Many children will require more than one round of chelation therapy.*

- 3) Continue monitoring until VPb is < 15 ug/dL on two occasions, three months apart
- 4) All children with significant lead exposure, and, especially, those who have undergone chelation, require a neurodevelopmental assessment. This should be obtained within 2 months of completion of the initial course of chelation, and, then, yearly until the age of 6.

## Important Contact Numbers

**Maine State Lab (for lead testing results): (207) 287-2727**  
**Maine Childhood Lead Poisoning Prevention Program: (207) 287-4311**  
**Maine Medical Center Inpatient Pharmacy: (207) 662-2151**  
**Maine Medical Center Lab: (207) 662-2711**

**New Hampshire Healthy Homes and Lead Poisoning Prevention Program:**  
**(603) 271-4507 and (800) 897-5323**