CHILDHOOD LEAD POISONING TREATMENT GUIDELINES
GUIDELINE #2: INPATIENT CHELATION WITH CHEMET (SUCCIMER, DMSA)

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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 also wait 2-4 weeks between consecutive courses of Chemet.**

5) **An absolute neutrophil count ≥ 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 treatment as an inpatient. (See Protocol #1)**

7) **Phone lab and pharmacy to assure adequate access to lab testing requirements and medications.**

ADVERSE EFFECTS OF CHEMET (SUCCIMER):

The most common adverse effects reported in clinical trials in children and adults were primarily gastrointestinal in nature and include nausea, vomiting, diarrhea, appetite loss, and loose stools. Rashes, some necessitating discontinuation of therapy, have been reported in about 4% of patients, primarily adults. Mild, transient elevations of serum transaminases (ALT, AST) have been observed in 6-10% of patients, primarily 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 February 2011, reviewed May 2014.

The Barbara Bush Children's Hospital
At Maine Medical Center

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), platelets: 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 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 evidence of XRAY 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 1000ml 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 100mg) PO TID (see dosing schedule below) for 5 days, then BID for the remaining 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)

LBS	KG	DOSE (MG)	NUMBER OF CAPSULES/DOSE
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.
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 and platelets: 0.5 ml in lavender micro. *Calculate ANC and consider withholding treatment for ANC <1200.*
Urinalysis (for protein)

CRITERIA FOR DISCHARGE:

1) **The patient must be able to reside in a lead safe home. The lead status of the home will be determined by a state contracted Lead Inspector at no cost to the family, contact MaryAnn Amrich, Program Manager Maine Childhood Lead Poisoning Prevention Program at (207) 287-4311 to arrange.**

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 studies.**

FOLLOW UP:

1) **The first follow up visit should be one-week after chelation has been completed and then again at two weeks. 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 original course of chelation, and then yearly until the age of 6.**

Important Contact Numbers

State Lab (for lead testing results): (207) 287-2727
Maine Childhood Lead Poisoning Prevention Program: (207) 287-4311
Maine Medical Center Inpatient Pharmacy: (207) 662-2131
Maine Medical Center Lab: (207) 662-2711