

## CHILDHOOD LEAD POISONING CHELATION TREATMENT GUIDELINES For Confirmed Venous Lead Level $\geq 45$ ug/dL

### NORTHERN NEW ENGLAND POISON CENTER (NNEPC) (800) 222-1222

- Consultation for all children with elevated lead levels is recommended
- **Urgent consultation** is strongly recommended (in order to consider alternative chelation options) for patients with:
  - **Lead levels  $\geq 70$  ug/dL**
  - Evidence of **encephalopathy**
  - **Precautions with use of succimer (Chemet®, DMSA)**, such as allergy, rash, neutropenia, elevated transaminases (ALT, AST) etc.

**CRITERIA FOR INPATIENT ADMISSION:** Many patients with confirmed venous blood levels (VPb)  $\geq 45$  ug/dL require inpatient admission. Admission is strongly recommended if ANY of the following are present:

- Lead level  $\geq 70$ ug/dL or evidence of encephalopathy. **Lumbar puncture should be avoided in cases of encephalopathy known to be due to lead toxicity.**
- KUB indicates presence of radiodensities, requiring whole bowel irrigation
- Succimer is unavailable in the outpatient setting, the patient is unwilling/unable to take succimer, or there is a contraindication to succimer
- The family does not understand the diagnosis of lead toxicity or requires intensive teaching
- Lead-safe housing cannot be secured

### CRITERIA FOR OUTPATIENT TREATMENT

- **The family is able to comply with the treatment plan**, administering medication and scheduling labs  
Instructions to family must include that they:
  - Ensure the child is adequately hydrated
  - If a rash develops, discontinue the medication and contact the prescriber
  - Seek medical evaluation for signs/symptom of infection
- The child must **reside in a documented lead-safe environment during outpatient chelation**. 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 New Hampshire Health Homes and Lead Poisoning Prevention Program (HHLPPP), (603) 271-4507 and (800) 897-LEAD (5323).
- There is no contraindication to succimer.

**CRITERIA FOR TREATMENT WITH SUCCIMER:** This guidance is appropriate for children with confirmed venous blood lead levels (VPb) 45-69 ug/dL and **no** evidence of encephalopathy. For questions or concerns, including lead level  $\geq 70$  ug/dL or encephalopathy, consult the **NNEPC** without delay.

1) A careful **history** should be taken for possible signs or symptoms of acute lead toxicity.

**Signs and 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 – **these findings may indicate encephalopathy**.
- Severe involvement: Seizures, coma, hypertension, papilledema, cranial nerve paralysis. **Lumbar puncture should be avoided in cases of encephalopathy known to be due to lead toxicity.**

2) **No history of allergy** to succimer

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 succimer.

5) An **absolute neutrophil count  $\geq 1500$  prior to the initiation of treatment**

6) Phone inpatient lab and pharmacy to assure adequate access to lab testing requirements and medications.

## PRIOR TO TREATMENT

A careful **history and physical exam** should be conducted.

**Exposure history** (including occupational history of family and caregivers) should be documented.

Obtain **BP**. Confirm **height** and **weight** (for dosing).

**Laboratory:** The following baseline laboratory data should be obtained:

- Repeat VPb – (Venous Lead), from [State of Maine](#): 0.5 ml in royal blue top – order STAT
- 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

**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 indicates the need for gut decontamination.

All families should be referred for a **social work assessment** (for housing assistance).

## TREATMENT

If there is x-ray evidence of lead in the gastrointestinal tract, GI decontamination should be carried out. (This should be done on an inpatient basis). **Polyethylene glycol** solution (GoLytely) can be used. 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.

Begin **succimer** at 10 mg/kg (rounded to the nearest 100 mg) PO TID (see dosing schedule below) for 5 days, then BID for 14 days. 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

Iron should not be administered simultaneously with succimer. If indicated for iron deficiency anemia, iron may be given 2-3 hours after the succimer dose.

Observe for any side effects of treatment as listed above. If fever or signs of infection are noted, check CBC with differential; consider contacting NNEPC and withholding treatment for ANC < 1200.

Weekly labs during chelation include:

- CMP: 0.6 ml in green micro
- CBC with diff: 0.5 ml in lavender micro. *Calculate ANC and consider holding treatment for ANC < 1200.*
- Urinalysis (for protein)

### CRITERIA FOR HOSPITAL 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 family must be able to comply with the treatment protocol.
- 3) The family must be able to attend follow-up appointments and laboratory testing.

### FOLLOW-UP

Consult with NNEPC for appropriate monitoring intervals and re-chelation indications.

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.

### ADVERSE EFFECTS OF SUCCIMER (CHEMET®, DMSA)

- 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 **liver 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.

## Important Contact Numbers

**Northern New England Poison Center (NNEPC): (800) 222-1222**

**Maine State Lab (for lead testing results): (207) 287-2727**

**Maine Childhood Lead Poisoning Prevention Program: (207) 287-4311**

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

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 2026, by Dr. Jennifer A. Jewell

