VENTURA COUNTY
HEALTH CARE PLAN

Prior Authorization DRUG Guidelines

DEFEROXAMINE MESYLATE

Effective Date: 1/28/14

Date Developed: 1/28/14 by Catherine Sanders, MD

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Deferoxamine is a chelating agent which complexes with trivalent ions (ferric ions) to form ferrioxamine, which is removed by the kidneys, slows accumulation of hepatic iron and retards or eliminates progression of hepatic fibrosis. Also known to inhibit DNA synthesis *in vitro*.

Pre-Authorization Criteria: adjunct in the treatment of acute iron intoxication; treatment of chronic iron overload secondary to multiple transfusions

Off-Label: diagnosis or treatment of aluminum-induced toxicity associated with chronic kidney disease (CKD)

Dosing: Adult:
Acute iron toxicity: Note: The I.V. route is used when severe toxicity is evidenced by cardiovascular collapse or systemic symptoms (coma, shock, metabolic acidosis, or gastrointestinal bleeding) or potentially severe intoxications (peak serum iron level >500 mcg/dL) (Perrone, 2011). When severe symptoms are not present, the I.M. route may be used (per the manufacturer).
I.M., I.V.: Initial: 1000 mg, may be followed by 500 mg every 4 hours for 2 doses; subsequent doses of 500 mg have been administered every 4-12 hours based on clinical response (maximum recommended dose: 6000 mg/day [per manufacturer])

Chronic iron overload:
I.M.: 500-1000 mg/day (maximum: 1000 mg/day)
I.V.: 40-50 mg/kg/day (maximum: 60 mg/kg/day) over 8-12 hours for 5-7 days per week
SubQ: 1000-2000 mg/day or 20-40 mg/kg/day over 8-24 hours
Unlabeled dosing: I.V., SubQ: 25-50 mg/kg over 8-10 hours 5-7 days per week (Brittenham, 2011)

Diagnosis of aluminum-induced toxicity with CKD (unlabeled use; K/DOQI guidelines, 2003): I.V.: Test dose: 5 mg/kg during the last hour of dialysis if serum aluminum levels are 60-200 mcg/L, or clinical signs/symptoms of toxicity, or aluminum exposure prior to parathyroid surgery. Measure aluminum just prior to deferoxamine; remeasure 2 days later (test is positive if serum aluminum is ≥50 mcg/L). Do not use if aluminum serum levels are >200 mcg/L. Treatment of aluminum toxicity with CKD (unlabeled use; K/DOQI guidelines, 2003): I.V.:

Administer after diagnostic deferoxamine test dose. Note: The risk for deferoxamine-associated neurotoxicity is increased if aluminum serum levels are >200 mcg/L; withhold deferoxamine and administer intensive dialysis until <200 mcg/L.
Aluminum rise ≥300 mcg/L: 5 mg/kg once a week 5 hours before dialysis for 4 months
Aluminum rise <300 mcg/L: 5 mg/kg once a week during the last hour of dialysis for 2 months

Dosing: Pediatric:
Acute iron toxicity: Children ≥3 years: Note: The I.V. route is used when severe toxicity is evidenced by cardiovascular collapse or systemic symptoms (coma, shock, metabolic acidosis, or gastrointestinal bleeding) or potentially severe intoxications (peak serum iron level >500 mcg/dL) (Perrone, 2011). When severe symptoms are not present, the I.M. route may be used (per the manufacturer).
I.M.: 90 mg/kg/dose every 8 hours (maximum: 6000 mg/24 hours)
I.V.: 15 mg/kg/hour (maximum: 6000 mg/24 hours)

Chronic iron overload: Children ≥3 years:
I.V.: 20-40 mg/kg/day over 8-12 hours for 5-7 days per week; dose should not exceed 40 mg/kg/day until growth has ceased
SubQ: 20-40 mg/kg/day over 8-12 hours (maximum: 1000-2000 mg/day)
Unlabeled dosing: I.V., SubQ: 25-30 mg/kg over 8-10 hours 5-7 days per week (Brittenham, 2011)
Diagnosis of aluminum induced toxicity with CKD (unlabeled use; K/DOQI guidelines, 2003): Children: I.V.: Test dose: 5 mg/kg during the last hour of dialysis if serum aluminum levels are 60-200 mcg/L, or clinical signs/symptoms of toxicity, or aluminum exposure prior to parathyroid surgery. Measure aluminum just prior to deferoxamine; remeasure 2 days later (test is positive if serum aluminum is ≥50 mcg/L). Do not use if aluminum serum levels are >200 mcg/L.
Treatment of aluminum toxicity with CKD (unlabeled use; K/DOQI guidelines, 2003): Children: I.V.: Administer after diagnostic deferoxamine test dose. Note: The risk for deferoxamine-associated neurotoxicity is increased if aluminum serum levels are >200 mcg/L; withhold deferoxamine and administer intensive dialysis until <200 mcg/L.
Aluminum rise ≥300 mcg/L: 5 mg/kg once a week 5 hours before dialysis for 4 months
Aluminum rise <300 mcg/L: 5 mg/kg once a week during the last hour of dialysis for 2 months

Dosing: Geriatric:
Refer to adult dosing. May initiate at the lower end of the dosing range.

Dosing: Renal Impairment:
Severe renal disease or anuria: Use is contraindicated in the manufacturer's U.S. labeling.
The following adjustments have been used by some clinicians (Aronoff, 2007): Adults:
Cl_{cr} >50 mL/minute: No adjustment required
Cl_{cr} 10-50 mL/minute, CRRT: Administer 25% to 50% of normal dose
Cl_{cr}<10 mL/minute, hemodialysis, peritoneal dialysis: Avoid use

Dosing: Hepatic Impairment:
There are no dosage adjustments provided in the manufacturer's labeling (has not been studied).

Dosage Forms: U.S.:
Excipient information presented when available (limited, particularly for generics); consult specific product labeling.
Solution Reconstituted, Injection, as mesylate:
Desferal: 500 mg (1 ea); 2 g (1 ea)

Generic: 500 mg (1 ea); 2 g (1 ea)

Generic Equivalent Available: U.S.-Yes

Administration:
I.V.: Urticaria, flushing of the skin, hypotension, and shock have occurred following rapid I.V. administration; limiting infusion rate to 15mg/kg/hour may help avoid infusion-related adverse effects. Acute iron toxicity: The manufacturer states that the I.M. route is preferred; however, the I.V. route is generally preferred in patients with severe toxicity (ie, patients in shock). For the first 1000 mg, infuse at 15 mg/kg/hour. Subsequent doses may be given over 4-12 hours at a rate not to exceed 125 mg/hour. Chronic iron overload: Administer over 8-12 hours for 5-7 days per week; rate not to exceed 15 mg/kg/hour. In patients with poor compliance, deferoxamine may be administered on the same day of blood transfusion, either prior to or following transfusion; do not administer concurrently with transfusion. Longer infusion times (24 hours) and I.V. administration may be required in patients with severe cardiac iron deposition (Brittenham, 2011).
Diagnosis or treatment of aluminum-induced toxicity with CKD: Administer dose over 1 hour, during the last hour of dialysis (K/DOQI guidelines, 2003).
SubQ: When administered for chronic iron overload, administration over 8-12 hours using a portable infusion pump is generally recommended; however, longer infusion times (24 hours) may also be used. Topical anesthetic or glucocorticoid creams may be used for induration or erythema (Brittenham, 2011).
I.M.: I.M. administration may be used for patients with acute iron toxicity that do not exhibit severe symptoms (per the manufacturer); may also be used in the treatment of chronic iron toxicity.
Compatibility
Stable in D_5W, LR, NS, sterile water for injection.

Exceptions:
Deferoxamine will not be covered for use in the diagnosis or treatment of aluminum toxicity in patients with CKD undergoing maintenance dialysis as these are unlabeled uses.
Deferoxamine is not to be used is patient with severe renal disease or anuria.
Deferoxamine is not indicated for the treatment of primary hemochromatosis (treatment of choice is phlebotomy)

Adverse Reactions:
Severe: cataracts (long term use), optic neuritis, vision loss, hearing loss, anaphylaxis, angiodemea, growth retardations (high dose use), bone changes, hypotension, severe (rapid IV use), shock (rapid IV use), asthma, cardiac dysfunction (vitamin C combination treatment), ARDS, Yersinia infections susceptibility increased, mucormycosis, blood dyscrasias, neuropathy, acute renal failure.

References:
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12. www.epocrates.com: Deferoxamine Drug Information

REVISION HISTORY:

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