Drug Monograph

Drug/Drug Class:	**Vimizim™ (elosulfase alfa) injection/ hydrolytic lysosomal glycosaminoglycan (GAG)-specific enzyme**
Prepared for:	MO HealthNet
Prepared by:	Xerox Heritage, LLC

☒ New Criteria ☐ Revision of Existing Criteria

Executive Summary

Purpose:	The purpose of this monograph is to provide a review of new therapy to determine whether the reviewed drug should be made available on an open access basis to prescribers, require a clinical edit or require prior authorization for use.
Dosage Forms & Manufacturer:	Vimizim™ is available as a 5 mg/5 mL single use vial containing 1 mg/mL elosulfase alfa. BioMarin Pharmaceutical Inc. Novato, CA 94949 U.S. License No. 1649
Summary of Findings:	Vimizim™ is a recombinant lysosomal enzyme approved for the treatment of mucopolysaccharidosis type IVA (Morquio A syndrome). It is the first agent approved to treat the underlying disorder in the rare Morquio A syndrome.
Status Recommendation:	☐ Prior Authorization (PA) Required ☒ Open Access ☐ Fiscal Edit ☐ PDL Edit
Type of PA Criteria:	☐ Increased Risk of ADE ☐ Preferred Agent ☐ Appropriate Indications ☒ No PA Required

Purpose

The purpose of this monograph is to provide a review of new therapy to determine whether the reviewed drug should be considered a prior authorization drug, a clinical edit drug or an open access drug. While prescription expenditures are increasing at double-digit rates, payors are evaluating ways to control these costs by influencing prescriber behavior and guide appropriate medication usage. This review will assist in the achievement of qualitative and economic goals related to health care resource utilization. Restricting the use of certain medications can reduce costs by requiring documentation of appropriate indications for use, and where appropriate, encourage the use of less expensive agents within a drug class.

Introduction[1]

Morquio's syndrome is an autosomal recessive mucopolysaccharide storage disease with serious consequences. The accumulation of mucopolysaccharides leads to corneal clouding, aortic valve disease and urinary excretion of keratin sulfate.

Dosage Form(s) [1]

Vimizim™ is available as a 5 mg/5 mL single use vial containing 1 mg/mL elosulfase alfa.

Manufacturer [1]

BioMarin Pharmaceutical Inc.
Novato, CA 94949

Indication(s) [1]

Vimizim™ is a recombinant lysosomal enzyme approved for the treatment of mucopolysaccharidosis type IVA (Morquio A syndrome).

Clinical Efficacy [1] (mechanism of action/pharmacology, comparative efficacy)

Mucopolysaccharidosis type IVA is caused by a lack of or deficiency of N-acetylgalactosamine-6-sulfatase activity, which leads to the accumulation of the glycosaminoglycans (GAG) keratan sulfate (KS) and chondroitin-6-sulfate (C6S) in the cell lysosomes. This results in cellular, tissue, and organ dysfunction throughout the body. Elosulfase alfa, a purified human enzyme produced by recombinant DNA technology, provides exogenous N-acetylgalactosamine-6-sulfatase that results in increased catabolism of KS and C6S.

Pharmacokinetics

	Vimizim™
Volume of distribution	396 +/- 316 mL/kg at week 0 and 650 +/- 1842 mL/kg at week 22
Half-life	7.52 +/- 5.48 minutes and 35.9 +/- 21.5

The efficacy of Vimizim™ was demonstrated in a randomized, double-blind, placebo-controlled trial of 176 patients, aged 5 to 57 years, with mucopolysaccharidosis type IVA. After 24 weeks of treatment, the 6-minute walking distance improved by 22.5 m in patients who received once-weekly Vimizim™ compared with placebo. Walking distance did not continue to improve after an additional 48 weeks of treatment.

MUCOPOLYSACCHARIDOSIS TYPE IVA

STUDY DESIGN	Randomized, double-blind, placebo-controlled, 24-week clinical trial (n=176).
INCLUSION CRITERIA	Patients with mucopolysaccharidosis type IVA.
EXCLUSION CRITERIA	Not specified.
TREATMENT REGIMEN	Patients (5 to 57 years of age) were randomized to receive Vimizim™ 2 mg/kg IV once weekly (n=58), Vimizim™ 2 mg/kg IV once every other week (n=59), or placebo (n=59).
RESULTS	At baseline, patients could walk 30 to 325 m in 6 minutes; 82% had a history of musculoskeletal conditions including knee deformity (52%), kyphosis (31%), hip dysplasia (22%), prior spinal fusion surgery (22%), and arthralgia (20%). At week 24, the mean distance walked in 6 minutes (primary endpoint) increased by 36.5 m in the once-weekly Vimizim™ group and 13.5 m in the placebo group (between-group adjusted mean difference, 22.5 m; 95% CI, 4 to 40.9 m; p=0.0174). No significant improvement in the 3-minute stair climbing rate was observed between groups. The results in patients receiving Vimizim™ every other week did not differ significantly from placebo. During a 48-week, open-label extension trial (n=173), no further improvement in walking ability was observed with Vimizim™.
SAFETY	Not specified.

Contraindications [(1)]

- None

Warnings and Precautions [(1)]

- Anaphylaxis, including life-threatening reactions, and hypersensitivity reactions have been reported regardless of treatment duration; monitoring and premedication with antihistamines recommended; immediately stop infusion if severe hypersensitivity occurs.
- Acute febrile or respiratory illness, preexisting; increased risk of life-threatening complications from hypersensitivity events; monitoring recommended; consider delaying infusion.
- Patients requiring supplemental oxygen or CPAP during sleep; increased risk of an acute reaction or extreme drowsiness/sleep induced by antihistamine use; monitoring recommended; have oxygen or CPAP readily available during infusion.
- Spinal or cervical cord compression may occur; monitoring recommended.

Adverse Effects [(1)]

Most common, >= 10%	**Vimizim™**	**Placebo**
	(n=58)	**(n=59)**
▪ Pyrexia	33%	14%

▪ Vomiting	31%	7%
▪ Headache	26%	15%
▪ Nausea	24%	7%
▪ Abdominal pain	21%	1.7%
▪ Chills	10.3%	1.7%
▪ Fatigue	10.3%	3.4%

Drug Interactions [(1)]

- Drug interactions have not been determined at this time.

Dosage and Administration [(1)]

The recommended dose is 2 mg/kg by IV infusion once weekly over a minimum of 3.5 to 4.5 hours based on infusion volume. Antihistamines, with or without antipyretics, are recommended 30 to 60 minutes before the start of the infusion.

Cost

GENERIC NAME	BRAND NAME	MANUFACTURER	STRENGTH	COST/VIAL
Elosulfase alfa	Vimizim	BioMarin Pharmaceutical	5 mg/single-use vial	$ 215.75

*MissouriMaximumAllowableCost

Conclusion

Vimizim™ is a recombinant lysosomal enzyme approved for the treatment of mucopolysaccharidosis type IVA (Morquio A syndrome). It is the first agent approved to treat the underlying disorder in the rare Morquio A syndrome. The efficacy of Vimizim™ was demonstrated in a randomized, double-blind, placebo-controlled trial of 176 patients, aged 5 to 57 years. After 24 weeks of treatment, 6-minute walking distance improved by 22.5 m in patients who received once-weekly Vimizim™ compared with placebo. Walking distance did not improve further after an additional 48 weeks of treatment. The most common adverse effects include pyrexia, vomiting, headache, nausea, abdominal pain, chills, and fatigue.

Recommendation

MO HealthNet Division recommends Open Access status for this product.

References

1. Product Information: Vimizim™, elosulfase alfa injection. BioMarin Pharmaceutical Inc, Novato, CA, 2/2014.

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Date: May 14, 2014

