

PRIOR AUTHORIZATION POLICY

POLICY: Crysvida Prior Authorization Policy

- Crysvida® (burosumab-twza injection, subcutaneous use – Ultragenyx)

REVIEW DATE: 06/09/2021

OVERVIEW

Crysvida, a fibroblast growth factor 23 (FGF23) blocking antibody, is indicated for¹:

- **Tumor-induced osteomalacia**, for treatment of FGF-related hypophosphatemia associated with phosphaturic mesenchymal tumors that cannot be curatively resected or localized in patients ≥ 2 years of age.
- **X-linked hypophosphatemia** in patients ≥ 6 months of age.

Disease Overview

Tumor-Induced Osteomalacia

Tumor-induced osteomalacia is an extremely rare condition caused by tumors that produce the phosphaturic hormone FGF23.⁷ Elevated FGF23 causes renal phosphate wasting, which ultimately leads to hypophosphatemia, rickets, and osteomalacia. Tumor-induced osteomalacia is generally caused by small, slow-growing, benign phosphaturic mesenchymal tumors; complete resection of the tumor results in cure. However, in some cases, locating the tumor is not possible or the tumor may be inoperable. Patients usually present in adulthood with symptoms of fatigue, muscle weakness, and pain.⁸ They may also experience decreased bone mineral density and frequent fractures. Current treatment of patients with inoperable or unidentifiable tumors has been phosphate supplementation and active vitamin D.

X-Linked Hypophosphatemia

X-linked hypophosphatemia is a condition that is believed to result from an inactivating genetic mutation in phosphate regulating endopeptidase on the X chromosome (PHEX).²⁻⁵ This mutation leads to increased levels of FGF23, which increases phosphate excretion and abnormal vitamin D metabolism, ultimately leading to hypophosphatemic rickets.^{2-4,6} Signs and symptoms of X-linked hypophosphatemia differ in pediatric patients who are still growing vs. adults whose epiphyseal plates have fused. In adults, symptoms include calcification of tendons, ligaments, and joint capsules, joint pain, impaired mobility, spontaneous dental abscesses, stress fractures, and sensorineural hearing loss. The X-linked hypophosphatemia diagnosis can be established in patients with a low serum phosphate concentration, a reduced tubular resorption of phosphate corrected for glomerular filtration rate (TmP/GFR), an inappropriate calcitriol level for the severity of hypophosphatemia, and/or by identification on molecular genetic testing of a hemizygous PHEX pathogenic variant in a male patient or a heterozygous PHEX pathogenic variant in a female patient. Genetic testing can provide a negative or positive confirmation in 70 to 90% of patients with X-linked hypophosphatemia.⁵ If a genetic test is unavailable, an elevated fibroblast growth factor 23 (FGF23) level can also support the diagnosis. However, FGF23 levels may be influenced by other factors, particularly phosphate and vitamin D therapy. FGF23 levels may be elevated in several other forms of hypophosphataemic rickets as well. Finally, the normal range of FGF23 varies according to the assay used.

Clinical Efficacy

Tumor-Induced Osteomalacia

Two studies evaluated the efficacy of Crysvita in patients with tumor-induced osteomalacia.^{1,14,15} Eligible patients were adults with a confirmed diagnosis of FGF-23-related hypophosphatemia produced by an underlying tumor that was not amenable to surgical excision or could not be located. In addition to low baseline serum phosphorus, patients were also required to have a low tubular reabsorption of phosphate corrected for glomerular filtration rate (TmP/GFR) and a high FGF23 level. The vast majority of patients had previously received phosphate and active vitamin D therapy. Crysvita was found to increase the mean serum phosphorus level from baseline through Week 24 (Month 6) when levels stabilized. These increases were sustained near or above the lower limit of normal through Week 144. Most measures of osteomalacia were improved over time as well.

X-Linked Hypophosphatemia

The efficacy of Crysvita for the treatment of X-linked hypophosphatemia was evaluated in several clinical trials in pediatric and adult patients with X-linked hypophosphatemia.¹ Eligible patients had baseline serum phosphorus levels less than the lower limit of normal for age.^{1,9-11} Across the studies, Crysvita was found to increase mean serum phosphorus levels significantly from baseline. Radiographic improvements and healing of fractures/pseudofractures were also observed. In a single-arm extension of the adult study, normalization of serum phosphorous was maintained during an additional 24 weeks of Crysvita therapy.¹² Improvements in healing of fractures/pseudofractures were also observed. One additional study compared Crysvita with conventional therapy in patients 1 to 12 years of age with X-linked hypophosphatemia.¹³ Following 64 weeks of therapy, patients receiving Crysvita had demonstrated a significantly greater improvement in the Radiographic Global Impression of Change global score compared with the conventional therapy group.

Guidelines

X-Linked Hypophosphatemia

In 2019, an expert panel published Clinical Practice Recommendations for the Diagnosis and Management of X-linked hypophosphatemia.⁵ This document recommends treatment with oral phosphate and active vitamin D (e.g., calcitriol) for symptomatic adults with X-linked hypophosphatemia. Crysvita therapy should be considered for the treatment of adults with X-linked hypophosphatemia with the following features: persistent bone/joint pain due to X-linked hypophosphatemia and/or osteomalacia that limits daily activities; pseudofractures or osteomalacia-related fractures; and insufficient response or refractory to oral phosphate and active vitamin D. If patients experience complications related to oral phosphate and active vitamin D, Crysvita is recommended as well.

POLICY STATEMENT

Prior authorization is recommended for prescription benefit coverage of Crysvita. Because of the specialized skills required for evaluation and diagnosis of patients treated with Crysvita as well as the monitoring required for adverse events and long-term efficacy, approval requires Crysvita to be prescribed by or in consultation with a physician who specializes in the condition being treated. All approvals are provided for the duration noted below.

Automation: None.

RECOMMENDED AUTHORIZATION CRITERIA

Coverage of Crysvita is recommended in those who meet the following criteria:

FDA-Approved Indication

1. **Tumor-Induced Osteomalacia.** Approve Crysvita for the duration noted if the patient meets ONE of the following criteria (A or B):
 - A) **Initial Therapy.** Approve for 6 months if the patient meets ALL of the following criteria (i, ii, iii, iv, v, vi, and vii):
 - i. Patient is ≥ 2 years of age; AND
 - ii. Patient has a mesenchymal tumor that cannot be curatively resected or identified/localized; AND
 - iii. Per the prescriber, the patient is currently exhibiting one or more signs or symptoms of tumor-induced osteomalacia; AND
Note: Examples of signs and symptoms of tumor-induced osteomalacia include bone pain, impaired mobility, muscle weakness, and fatigue.
 - iv. Patient has had a baseline serum phosphorus level that was below the normal range for age; AND
Note: “Baseline” is defined as prior to receiving any tumor-induced osteomalacia treatment, such as Crysvita, oral phosphate, or vitamin D therapy.
 - v. Patient has had a baseline tubular reabsorption of phosphate corrected for glomerular filtration rate (TmP/GFR) that was below the normal range for age and gender; AND
Note: “Baseline” is defined as prior to receiving any tumor-induced osteomalacia treatment, such as Crysvita, oral phosphate, or vitamin D therapy.
 - vi. Patient meets ONE of the following (a or b):
 - 1) Patient has tried oral phosphate and calcitriol therapy; OR
 - 2) Per the prescriber the patient has a contraindication to oral phosphate therapy, calcitriol therapy, or both; AND
 - vii. The medication is prescribed by or in consultation with an endocrinologist or nephrologist.
 - B) **Patient is Currently Receiving Crysvita.** Approve for 1 year if the patient is continuing to derive benefit from Crysvita as determined by the prescriber.
Note: Examples of a response to Crysvita therapy are increased phosphorus levels, decreased symptoms of bone pain and/or muscle weakness, and increased mobility.
2. **X-Linked Hypophosphatemia.** Approve Crysvita for the duration noted if the patient meets ONE of the following criteria (A or B):
 - A) **Initial Therapy.** Approve for 1 year if the patient meets ALL of the following criteria (i, ii, iii, and iv):
 - i. Patient has had a baseline serum phosphorus level that was below the normal range for age; AND
Note: “Baseline” is defined as prior to receiving any X-linked hypophosphatemia treatment, such as Crysvita, oral phosphate, or vitamin D therapy.
 - ii. Patient meets ONE of the following (a or b):
 - a) Patient has had a baseline tubular reabsorption of phosphate corrected for glomerular filtration rate (TmP/GFR) that was below the normal range for age and gender; OR
Note: “Baseline” is defined as prior to receiving any X-linked hypophosphatemia treatment, such as Crysvita, oral phosphate, or vitamin D therapy.
 - b) Patient has had a genetic test confirming the diagnosis of X-linked hypophosphatemia via identification of a PHEX mutation; AND
 - iii. If the patient is ≥ 18 years of age, the patient meets BOTH of the following (a and b):
 - a) Per the prescriber, the patient is currently exhibiting one or more signs or symptoms of X-linked hypophosphatemia; AND

Note: Examples of signs and symptoms of X-linked hypophosphatemia in patients ≥ 18 years of age include fractures/pseudofractures, bone and joint pain, muscle weakness, and impaired mobility.

- b) Patient meets ONE of the following (1 or 2):
- 1) Patient has tried oral phosphate and calcitriol therapy; OR
 - 2) Per the prescriber the patient has a contraindication to oral phosphate therapy, calcitriol therapy, or both; AND
- iv. The medication is prescribed by or in consultation with an endocrinologist or nephrologist.
- B) Patient is Currently Receiving Crysvita. Approve for 1 year if the patient is continuing to derive benefit from Crysvita as determined by the prescriber.

Note: Examples of a response to Crysvita therapy are increased phosphorus levels, radiographic improvement in deformities, healing of fractures/pseudofractures, reduction in the incidence of new fractures/pseudofractures.

CONDITIONS NOT RECOMMENDED FOR APPROVAL

Coverage of Crysvita is not recommended in the following situations:

1. **Chronic Kidney Disease, Severe Renal Impairment or End Stage Renal Disease.** Crysvita is contraindicated in patients with severe renal impairment or end stage renal disease.¹ These patients often have abnormal mineral metabolism which may be associated with FGF23. However, Crysvita has not been studied for the treatment of patients with chronic kidney disease who have elevations of FGF23 impacting phosphate regulation.^{1,9}
2. **Epidermal Nevus Syndrome.** More data are necessary to establish the efficacy and safety of Crysvita in patients with epidermal nevus syndrome. Patients with epidermal nevus syndrome were eligible to enroll in one of the Phase II tumor-induced osteomalacia studies of Crysvita.¹⁵ However, no patients with epidermal nevus syndrome enrolled.
3. Coverage is not recommended for circumstances not listed in the Recommended Authorization Criteria. Criteria will be updated as new published data are available.

REFERENCES

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