

## Clinical Policy: Fosdenopterin (Nulibry)

Reference Number: PA.CP.PHAR.471

Effective Date: 07/2021

Last Review Date: 04/2023

[Coding Implications](#)  
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### Description

Fosdenopterin (Nulibry™) is a cyclic pyranopterin monophosphate (cPMP) replacement therapy.

### FDA Approved Indication(s)

Nulibry is indicated to reduce the risk of mortality in patients with molybdenum cofactor deficiency (MoCD) type A.

### Policy/Criteria

*Provider must submit documentation (such as office chart notes, lab results or other clinical information) supporting that member has met all approval criteria.*

It is the policy of PA Health & Wellness® that Nulibry is **medically necessary** when the following criteria are met:

## I. Initial Approval Criteria

### A. Molybdenum Cofactor Deficiency Type A (must meet all):

1. One of the following (a or b):
  - a. Diagnosis of MoCD type A confirmed by genetic testing (i.e., presence of molybdenum cofactor synthesis gene 1 [MOCS1] mutation) (*see Appendix D*);
  - b. Age  $\leq$  28 days old, and diagnosis of MoCD type A is presumed based on onset of clinical and laboratory signs/symptoms consistent with MoCD type A (*see Appendix D*);
2. Prescribed by or in consultation with a neonatologist, neurologist, or specialist with expertise in the management of inborn errors of metabolism (e.g., pediatric geneticist);
3. Documentation of member's current weight in kilograms;
4. Dose does not exceed any of the following (a or b):
  - a. Age  $<$  1 year: the titration schedule as outlined in section V, then 0.9 mg/kg per day (*see Appendix E for vial quantity recommendations*);
  - b. Age  $\geq$  1 year: 0.9 mg/kg per day (*see Appendix E for vial quantity recommendations*).

#### Approval duration:

**Genetically confirmed diagnosis – 6 months**

**Presumptive diagnosis – 1 month**

### B. Other diagnoses/indications

1. Refer to the off-label use policy if diagnosis is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized): PA.CP.PMN.53

## II. Continued Therapy

### A. Molybdenum Cofactor Deficiency Type A (must meet all):

1. Currently receiving medication via PA Health & Wellness benefit and documentation supports positive response to therapy or the Continuity of Care policy (PA.LTSS.PHAR.01) applies;
2. If the diagnosis of MoCD type A was presumptive at the time of initial authorization, it has since been confirmed by genetic testing (i.e., presence of MOCS1 mutation) (*see Appendix D*);
3. Member is responding positively to therapy as evidenced by, including but not limited to, improvement in any of the following parameters:
  - a. Clinical outcomes, such as: improved symptoms, achievement of motor milestones, decreased seizure activity, lack of clinical deterioration (e.g., no progression to severe epileptic encephalopathy);
  - b. Biochemical outcomes, such as: decreased or normalized urinary s-sulfocysteine (SSC) or xanthine levels, increased or normalized uric acid levels;
4. Documentation of member's current weight in kilograms;
5. If request is for a dose increase, new dose does not exceed 0.9 mg/kg per day (*see Appendix E for vial quantity recommendations*).

**Approval duration: 12 months**

**B. Other diagnoses/indications (must meet 1 or 2):**

1. Currently receiving medication via PA Health & Wellness benefit and documentation supports positive response to therapy or the Continuity of Care policy (PA.LTSS.PHAR.01) applies.

**Approval duration: Duration of request or 6 months (whichever is less); or**

2. Refer to the off-label use policy if diagnosis is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized): PA.CP.PMN.53.

**III. Diagnoses/Indications for which coverage is NOT authorized:**

- A. Non-FDA approved indications, which are not addressed in this policy, unless there is sufficient documentation of efficacy and safety according to the off label use policies – PA.CP.PMN.53;
- B. MoCD type B.

**IV. Appendices/General Information**

*Appendix A: Abbreviation/Acronym Key*

cPMP: cyclic pyranopterin monophosphate

FDA: Food and Drug Administration

MoCD: molybdenum cofactor deficiency

MOCS1: molybdenum cofactor synthesis gene 1

SSC: s-sulfocysteine

*Appendix B: Therapeutic Alternatives*

Not applicable

*Appendix C: Contraindications/Boxed Warnings*

None reported

*Appendix D: General Information*

- A list of available genetic tests for MoCD type A can be found here: <https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=C1854988&filter=testtype:clinical>.
- Clinical and laboratory signs/symptoms consistent with MoCD type A include, but are not limited to: seizures, exaggerated startle response, high-pitched cry, axial hypotonia, limb hypertonia, feeding difficulties, elevated urinary sulfite and/or SSC, elevated xanthine in urine or blood, low or absent uric acid in the urine or blood.

*Appendix E: Vial Quantity Recommendations*

The below recommendations are based on average weight (50<sup>th</sup> percentile) by age according to WHO and CDC growth charts. Members whose actual body weight exceeds the average weight should be approved for the appropriate number of vials required to achieve the desired dose.

Age Range	# Vials/Day
0 to < 1 year	1
1 to < 5 years	2
5 to < 8 years	3
8 to < 11 years	4
11 to < 13 years	5
13 to < 15 years	6
15 to < 17 years	7
17 to 20 years	8

**V. Dosage and Administration**

Indication	Dosing Regimen	Maximum Dose
MoCD type A	<p>Titration schedule for age &lt; 1 year:</p> <ul style="list-style-type: none"> <li>• Preterm neonates (gestational age &lt; 37 weeks): <ul style="list-style-type: none"> <li>○ Initial dosage: 0.4 mg/kg IV QD</li> <li>○ Month 1: 0.7 mg/kg IV QD</li> <li>○ Month 3: 0.9 mg/kg IV QD</li> </ul> </li> <li>• Term neonates (gestational age ≥ 37 weeks): <ul style="list-style-type: none"> <li>○ Initial dosage: 0.55 mg/kg IV QD</li> <li>○ Month 1: 0.75 mg/kg IV QD</li> <li>○ Month 3: 0.9 mg/kg IV QD</li> </ul> </li> </ul> <p>Age ≥ 1 year: 0.9 mg/kg IV QD</p>	0.9 mg/kg/day

**VI. Product Availability**

Lyophilized powder or cake in a single-dose vial for reconstitution: 9.5 mg

**VII. References**

1. Nulibry Prescribing Information. Boston, MA: Origin Biosciences, Inc.; October 2022. Available at: [www.nulibry.com](http://www.nulibry.com). Accessed February 5, 2023.
2. ClinicalTrials.gov. Study of ORGN001 (formerly ALXN1101) in neonates with molybdenum cofactor deficiency (MOCD) type A. Available at: <https://clinicaltrials.gov/ct2/show/NCT02629393>. Accessed March 8, 2021.

3. ClinicalTrials.gov. Safety & efficacy study of ORGN001 (formerly ALXN1101) in pediatric patients with MoCD type A currently treated with rcPMP. Available at: <https://clinicaltrials.gov/ct2/show/NCT02047461>. Accessed March 8, 2021.
4. Schwahn BC, Van Spronsen FJ, Belaidi AA, et al. Efficacy and safety of cyclic pyranopterin monophosphate substitution in severe molybdenum cofactor deficiency type A: a prospective cohort study. *Lancet*. 2015; 386: 1955-1963.
5. Spiegel R, Schwahn B, Scribner CL, Confer N. A natural history study of molybdenum cofactor (MoCo) and isolated sulfite oxidase deficiencies (ISOD). Poster presented at the 2019 Society for the Study of Inborn Errors of Metabolism (SSIEM); September 3-6, 2019; Rotterdam, The Netherlands.
6. U.S. National Library of Medicine, Genetics Home Reference. Molybdenum cofactor deficiency. Reviewed March 2014. Available at: <https://ghr.nlm.nih.gov/condition/molybdenum-cofactor-deficiency>. Accessed February 5, 2023.
7. WHO growth charts: Data table for weight-for-age charts, birth-24 months. Available at: [https://www.cdc.gov/growthcharts/who/boys\\_length\\_weight.htm](https://www.cdc.gov/growthcharts/who/boys_length_weight.htm) and [https://www.cdc.gov/growthcharts/who/girls\\_length\\_weight.htm](https://www.cdc.gov/growthcharts/who/girls_length_weight.htm). Accessed March 25, 2021.
8. CDC growth charts: Data table for weight-for-age charts, 2-20 years. Available at: [https://www.cdc.gov/growthcharts/html\\_charts/wtage.htm](https://www.cdc.gov/growthcharts/html_charts/wtage.htm). Accessed February 5, 2023.

**Coding Implications**

Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

HCPCS Codes	Description
J3490	Unclassified drugs
C9399	Unclassified drugs or biologicals

Reviews, Revisions, and Approvals	Date	P&T Approval Date
Policy created	07/2021	
2Q 2022 annual review: no significant changes; references reviewed and updated.	04/2022	
2Q 2023 annual review: no significant changes; references reviewed and updated.	04/2023	