

Zolgensma (onasemnogene abeparvovec-xioi)

Disclaimer

Clinical guidelines are developed and adopted to establish evidence-based clinical criteria for utilization management decisions. Clinical guidelines are applicable according to policy and plan type. The Plan may delegate utilization management decisions of certain services to third parties who may develop and adopt their own clinical criteria.

Coverage of services is subject to the terms, conditions, and limitations of a member's policy, as well as applicable state and federal law. Clinical guidelines are also subject to in-force criteria such as the Centers for Medicare & Medicaid Services (CMS) national coverage determination (NCD) or local coverage determination (LCD) for Medicare Advantage plans. Please refer to the member's policy documents (e.g., Certificate/Evidence of Coverage, Schedule of Benefits, Plan Formulary) or contact the Plan to confirm coverage.

Summary

Zolgensma targets and repairs the missing or non-functioning gene that is responsible for causing spinal muscular atrophy. Zolgensma is delivered as a single-dose, intravenous gene replacement therapy for children under 2 years old. Early restoration of the human survival motor neuron gene (SMN) may prevent the loss of motor neurons and subsequent muscle degeneration. As a new gene therapy, Zolgensma does not have a long-term research study. The member's guardian should discuss potential adverse events (e.g., hepatotoxicity and sensory neuron/ganglion toxicity) with careful consideration with the member's healthcare provider. Safe product handling and risk mitigation must be enforced to administer Zolgensma due to viral vector shedding.

Definitions

"Gene therapy" is a technique that replaces a mutated gene with a healthy gene, inactivates a mutated gene, or introduces a new gene that helps fight against diseases and disorders.

“Permanent ventilation” is defined as requiring invasive ventilation (tracheostomy), or respiratory assistance for 16 or more hours per day (including noninvasive ventilatory support) continuously for 14 or more days in the absence of an acute reversible illness, excluding perioperative ventilation.

“Spinal muscular atrophy (SMA)” is a genetic disease that affects the nervous systems and voluntary muscle movement. There is a loss of motor neurons in the spinal cord that cannot send signals for the muscles to move, resulting in weak and smaller muscles.

Medical Necessity Criteria for Authorization

The Plan considers **Zolgensma (onasemnogene abeparvovec-xioi)** medically necessary when **ALL** of the following criteria are met:

1. The prescriber is a neurologist or neuromuscular specialist with expertise in the diagnosis and management of spinal muscular atrophy (SMA); **AND**
2. The member is less than (<) 2 years of age at time of treatment; **AND**
3. The member has body weight of 13.5 kg or less at time of treatment; **AND**
4. The member is diagnosed with autosomal recessive 5 q13-linked (genetically proven) Spinal Muscular Atrophy (SMA) with bi-allelic mutations in the survival motor neuron 1 (SMN1) gene; **AND**
5. The member shows ability to sit independently (if age appropriate) and does NOT have complete paralysis of limbs or permanent ventilator dependence; **AND**
6. The member has baseline anti-adenovirus 9 (anti-AAV9) antibody titer $\leq 1:50$ measured by ELISA (enzyme-linked immunosorbent assay); **AND**
7. The following baseline laboratory testing has been conducted:
 - a. liver function (clinical exam, AST, ALT, total bilirubin, prothrombin time); **and**
 - b. platelet counts; **and**
 - c. troponin-I; **AND**
8. The requested medication will not be used concurrently with other SMA therapies such as Spinraza (nusinersen) or Evrysdi (risdiplam); **AND**
9. The member does not have a history of prior treatment with Zolgensma (onasemnogene abeparvovec-xioi) or any other gene transfer therapy for SMA; **AND**
10. Zolgensma (onasemnogene abeparvovec-xioi) is dosed at 1.1×10^{14} vector genomes per kilogram (vg/kg) of body weight administered as a one-time intravenous infusion.

If the above criteria are met, Zolgensma (onasemnogene abeparvovec-xioi) will be approved for one-time administration at the recommended dosing.

Please note:

1. Approval is provided for one-time single IV infusion only, in alignment with FDA-approved labeling.
2. Retreatment with Zolgensma (onasemnogene abeparvovec-xioi) is considered investigational, as safety and efficacy of repeat administrations have not been clinically established.

Experimental or Investigational / Not Medically Necessary

Zolgensma (onasemnogene abeparvovec-xioi) for any other indication is considered experimental or investigational. Non-covered indications include, but are not limited to, the following:

- Advanced SMA (i.e., complete paralysis of limbs or ventilator dependence)
- Premature infants before reaching full-term gestational age (because concomitant use of corticosteroids may adversely affect neurological development)
- Repeat administration (because the safety and effectiveness of repeat administration of ZOLGENSMA have not been evaluated)

Applicable Billing Codes (HCPCS/CPT Codes)

CPT/HCPCS Codes considered medically necessary if criteria are met:	
<i>Code</i>	<i>Description</i>
96365	Intravenous infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); initial, up to 1 hour
J3399	Injection, onasemnogene abeparvovec-xioi, per treatment, up to 5×10^{15} vector genomes
ICD-10 codes considered medically necessary if criteria are met:	
<i>Code</i>	<i>Description</i>
G12.0	Infantile spinal muscular atrophy, type I [Werdnig-Hoffman]
G12.1	Other inherited spinal muscular atrophy
G12.8	Other spinal muscular atrophies and related syndromes
G12.9	Spinal muscular atrophy, unspecified

References

1. Al-Zaidy SA, Mendell JR. From Clinical Trials to Clinical Practice: Practical Considerations for
2. Al-Zaidy SA, Pickard AS, Kotha K, et al. Health outcomes in spinal muscular atrophy type 1 following AVXS-101 gene replacement therapy. *Pediatr Pulmonol*. 2019;54(2):179-185.
3. Bashiri FA, Temsah M-H, Hundallah K, et al. 2020 Update to SMA Management in Saudi Arabia. *Frontiers in Pediatrics*. 2021;9: 486. Doi: <https://doi.org/10.3389/fped.2021.684134>
4. Biogen. Spinraza (nusinersen) injection, for intrathecal use. Prescribing Information. Reference ID: 4332160. Cambridge, MA: Biogen; revised October 2018.
5. Bodamer OA. Spinal muscular atrophy. UpToDate.com. Waltham, MA: UpToDate; last updated May 2020.
6. Broekhoff TF, Sweegers C, Krijkamp EM, et al. Early cost-effectiveness of Rx Zolgensma and Rx Spinraza treatment for MSA I in the Netherlands with relapse scenarios. *Science Direct Value Health*. 2021; 24(6):759-769. DOI: 10.1016/j.jval.2020.09.021
7. Butterfield, RJ. SMA Treatments, Newborn Screening, and the Creation of a
8. comparison with evaluation by the ICER. *Journal of Market Access & Health Policy*. 2021; 9(1). Doi: <https://doi.org/10.1080/20016689.2021.1889841>.
9. Dangouloff T, Servais L. Clinical Evidence supporting early treatment of patients with SMA: current perspectives. *Therapeutics and Clinical Risk Management*. 2019;15:1153-1161. doi: 10.2147/TCRM.S172291.
10. Day JW, Finkel RS, Chiriboga CA, et al. Onasemnogene abeparvovec gene therapy for symptomatic infantile-onset
11. Dean R, Jensen I, Cyr P, et al. An updated cost-utility model for Rx Zolgensma in SMA type 1 and
12. Farrar MA, Park SB, Vucic S, et al. Emerging therapies and challenges in spinal muscular atrophy. *Ann Neurol*. 2017;81(3):355-368.
13. FDA. ZOLGENSMA® (onasemnogene abeparvovec-xioi). https://www.avexis.com/us/Content/pdf/prescribing_information.pdf. Updated May 2019.
14. Finkel RS, Mercuri E, Meyer OH, et al; SMA Care group. Diagnosis and management of spinal muscular atrophy: Part 2: Pulmonary and acute care; medications, supplements and immunizations; other organ systems; and ethics. *Neuromuscul Disord*. 2018;28(3):197-207.
15. Gene Replacement Therapy in SMA Type 1. *Pediatric Neurology*. 2019;100:3-11. doi:<https://doi.org/10.1016/j.pediatrneurol.2019.06.007>
16. Hayes, Inc. Precision Therapy Assessment. Onasemnogene Abeparvovec-xioi (Zolgensma) for Spinal Muscular Atrophy. Lansdale, PA: Hayes, Inc., July 2020.
17. Keeler, AM, Flotte TR. Recombinant Adeno-Associated Virus Gene Therapy in light of Luxturna (and Zolgensma and Glybera): Where are we, and how did we get here ? *Annu Rev Virol*. 2019; 6(1): 601-602. doi: 10.1146/annurev-virology-092818-015530
18. Kirschner J, Butoianu N, Goemans N, et al. European ad-hoc consensus statement on gene replacement therapy for spinal muscular atrophy. *European Journal of Paediatric Neurology*. 2020; doi:<https://doi.org/10.1016/j.ejpn.2020.07.001>
19. Lowes LP, Alfano LN, Arnold WD, et al. Impact of age and motor function in a phase 1/2A study of infants with SMA type 1 receiving single-dose gene replacement therapy. *Pediatr Neurol*. 2019;98:39-45.
20. Mahajan R. Onasemnogene Abeparvovec for SMA: The Costlier Drug Ever. *Int J Appl Basic Med Res*. 2019; 9(3): 127 -128 doi: 10.4103/ijabmr.IJABMR_190_19:
21. Malone DC, Dean R, Arjunji R, et al. Cost-effectiveness analysis of using onasemnogene abeparvovec (AVXS-101) in spinal muscular atrophy type 1 patients. *J Mark Access Health Policy*. 2019;7(1):1601484.

22. Matesanz SE, Candace C, Gross B, et al. Clinical course in a patient with SMA Type 0 treated with nusinersen AND onasemnogene abeparvovec. *J Child Neurol.* 2020;35(11): 717-723. doi: 10.1177/0883073820928784.
23. Mendell JR, Al-Zaidy S, Shell R, et al. Single-dose gene-replacement therapy for spinal muscular atrophy. *N Engl J Med* 2017; 377:1713-22.
24. Mercuri E, Finkel RS, Muntoni F, et al; SMA Care Group. Diagnosis and management of spinal muscular atrophy: Part 1: Recommendations for diagnosis, rehabilitation, orthopedic and nutritional care. *Neuromuscul Disord.* 2018;28(2):103-115.
25. Messina S, Sframeli M. New Treatments in Spinal Muscular Atrophy: Positive Results and New Challenges. *Journal of Clinical Medicine.* 2020;9(7). doi:10.3390/jcm9072222
26. Naveed A, Calderon, H. Onasemnogene Abeparvovec (AVXS-101) for the Treatment of Spinal Muscular Atrophy. *J Pediatr Ther.* 2021;26 (5): 437–444. Doi:https://doi.org/10.5863/1551-6776-26.5.437
27. Neurogenetics Urgency. Review. *Semin Pediatr Neurol.* 2021;38:1000899. doi: 10.1016/j.spen.2021.100899.
28. Ojala KS, Reedich, EJ, DiDonato CJ, et al. In Search of a Cure: The Development of Therapeutics to Alter the Progression of Spinal Muscular Atrophy. *Brain Sci.* 2021;11 (2):194. doi: 10.3390/brainsci11020194
29. Prior TW, Leach, ME, Finanger E et al. Spinal Muscular Atrophy. 2000 Feb 24 [updated 2020 Dec 3]. In: Adam MP, Ardinger HH, Pagon RA, Wallace SE, Bean LJH, Mirzaa G, Amemiya A, editors. *GeneReviews®* [Internet]. Seattle (WA): University of Washington, Seattle; 1993–2021. PMID: 20301526.
30. Ricci F, Vacchetti M, Brusa C, et al. New pharmacotherapies for genetic neuromuscular disorders: opportunities and challenges. *Expert Rev Clin Pharmacol.* 2019;12(8):757-770.
31. Saffari A, Weiler M, Hoffmann GF, Ziegler A. Gene therapies for neuromuscular diseases. *Nervenarzt.* 2019;90(8):809-816.
32. Sheikh O, Yokota, T. Restoring Protein Expression in Neuromuscular Conditions: A Review Assessing the Current State of Exon Skipping/Inclusion and Gene Therapies for Duchenne Muscular Dystrophy and Spinal Muscular Atrophy. *BioDrugs.* 2021; 35(4):389-399. doi: 10.1007/s40259-021-00486-7.
33. SMA in patients with two copies of SMN2 (STR1VE): an open-label, single-arm, multicentre, phase 3 trial. *Lancet Neurol.* 2021 Apr;20(4):284-293. doi: 10.1016/S1474-4422(21)00001-6
34. Stevens D, Claborn MK, Gildon BL, et al. Onasemnogene abeparvovec-xioi: Gene therapy for spinal muscular atrophy. *Ann Pharmacother.* 2020 Oct;54(10):1001-1009..
35. Waldrop MA, Karingada C, Storey M, et al. Gene Therapy for Spinal Muscular Atrophy: Safety and Early Outcomes. *Pediatrics.* 2020;146(2) doi: 10.1542/peds.2020-0729.
36. Wang CH, Finkel RS, Bertini ES, et al. Consensus statement for standard of care in spinal muscular atrophy. *J Child Neurol.* 2007;22:1027-1049.
37. Ziegler A, Wilichowski E, Schara U, et al. Recommendations for gene therapy of sma with onasemnogene abeparvovec- AVXS-101. Consensus paper of the German Pediatric Neurology and German Society for Muscular Diseases. *Nervenarzt.* 2020 Jun;91(6): 518-529. doi: https://doi.org/10.1007/s00115-020-00919-8
38. Zolgensma (onasemnogene abeparvovec-xioi) [prescribing information]. Bannockburn, IL: Novartis Gene Therapies Inc; February 2023.

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