Pharmacy Focus:
Elevidys — A New Gene Therapy for Duchenne Muscular Dystrophy (DMD)

Key Takeaways

- Elevidys is the first gene therapy approved for ambulatory pediatric patients (ages 4 through 5 years) with Duchenne muscular dystrophy (DMD) with a confirmed genetic mutation.
- This one-time treatment provides the functioning gene responsible for production of dystrophin, a protein that is essential for muscle health.
- Use of Elevidys is projected to replace exon-skipping therapies, a high-cost treatment used with the eligible patient population.
- The projected estimated cost of Elevidys is $3,200,000 for a one-time infusion.

Overview of Duchenne Muscular Dystrophy[1,2]

Duchenne muscular dystrophy (DMD) is one of 30 currently identified types of muscular dystrophy. Prevalence statistics have varied over the years, but with genetic testing becoming a more common medical procedure, DMD has recently been estimated to occur in approximately 16 per 100,000 live male births in the United States. The disease is almost exclusive to males and ultimately causes permanent muscle damage due to a lack of dystrophin production. Dystrophin is an important protein that helps with muscle function.

DMD can be identified at a very young age when children are not meeting expected milestones. By the teenage years, it is common to see DMD patients completely wheelchair bound. As the disease progresses, muscle wasting is evident in all muscles, including those in the heart and respiratory system.

As a genetic disorder, DMD occurs through mutations like deletions, duplications and changes at the exons that make up genes specific to the disease, with deletion being the most common. Without all exons functioning appropriately, dystrophin is not produced at the level necessary to prevent muscle damage. The only way to find out where the gene mutation is occurring in someone with Duchenne muscular dystrophy is through genetic testing, which is essential in guiding health care professionals to the best therapy options currently available.

Current Treatment Options[3-14]

There is no cure for DMD. Commonly used treatment options include corticosteroid medications that can help to slow progression of muscle weakness, physical therapy and the use of durable medical equipment, such as braces or a wheelchair, as the disease progresses. In addition, exon-skipping therapies that require regular IV infusions are approved for specific DMD gene mutations to help the body produce more of the dystrophin protein. Now, a gene therapy has also been added to potential treatment options.

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Drug Name	Dosing	How It Works	Price	HCPCS Code
Prednisone	0.75 mcg/kg/day by mouth	Glucocorticoid Steroid	Approximately $1,300/year (based on a 30 kg child) Approximately $3,000/year (based on an average adult male)	Prescription Benefits
Emflaza® (Deflazacort)	0.9 mg/kg by mouth once daily	Glucocorticoid Steroid	Approximately $190,000/year for pediatric patients >$440,000 per year for adults	Prescription Benefits
Exondys 51® (Eteplirsen)	30 mg/kg IV once weekly	Exon-Skipping Therapy (specifically exon 51)	Approximately $900,000/year (based on a 30 kg child) >$2,000,000/year (based on an average adult male)	J1428
Vyondys 53® (Golodirsen)	30 mg/kg IV once weekly	Exon-Skipping Therapy (specifically exon 53)	Approximately $900,000/year (based on a 30 kg child) >$2,000,000/year (based on an average adult male)	J1429
Viltepso® (Viltolarsen)	80 mg/kg IV once weekly	Exon-Skipping Therapy (specifically exon 53)	Approximately $850,000/year (based on a 30 kg child) >$2,000,000/year (based on an average adult male)	J1427
Amondys 45® (Casimersen)	30 mg/kg IV once weekly	Exon-Skipping Therapy (specifically exon 45)	Approximately $900,000/year (based on a 30 kg child) >$2,000,000/year (based on an average adult male)	J1426
Elevidys (delandistrogene moxeparvovec)	**Single IV infusion**	**Gene Therapy**	**$3,200,000 once**	**C9399, J3590**

Therapy Spotlight: Elevidys (delandistrogene moxeparvovec)[3,15-21]

Elevidys is a new gene therapy produced by Sarepta Therapeutics, Inc. It was approved by the FDA on June 22, 2023 (under the Accelerated Approval pathway), for use in ambulatory pediatric patients ages 4 through 5 years old with DMD, as well as a confirmed genetic mutation in the DMD gene, and who do not have preexisting antibodies against the viral vector used to deliver the gene therapy. Those who have a confirmed deletion in exon 8 and/or exon 9 in the DMD gene are not eligible to receive Elevidys. The estimated cost for the one-time infusion of Elevidys is $3,200,000.

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Overall, the goal of Elevidys is to be the first potentially curative gene therapy for DMD by aiming to deliver a shortened version of the dystrophin gene to muscle tissue. After receiving Elevidys, participants ages 4 through 5 years old had an increase in the dystrophin gene, which the FDA believes to predict clinical benefit, although this clinical benefit has not yet been established. The most common side effects from treatment with Elevidys include nausea/vomiting, acute liver injury, fever and low platelet counts, as well as muscle inflammation, including the heart. Participants in the study had been on a stable dose of corticosteroids for at least 12 weeks prior to, as well as, after treatment with Elevidys.

SRP-9001-101, SRP-9001-102, and SRP-9001-103 (ENDEAVOR) were three-phase I/II studies that included more than 80 participants evaluating the safety of Elevidys over multiple timepoints, including one, two, and four years after treatment. Data collected and reviewed from these studies concluded that Elevidys was well tolerated with no new safety signals. Functional assessments demonstrated long-term, sustained, clinically meaningful improvement in motor function at ages where functional decline would be expected based on natural history in DMD patients. Upon approval of Elevidys, Sarepta has committed to continue the EMBARK study (SRP-9001-301), a phase III clinical trial with DMD participants ages 4 to 7 to show the clinical benefit of the gene therapy.

Cost Containment Considerations

As part of its HMConnects™ cost containment program, HM Insurance Group (HM) works to support cost-management opportunities around the use of gene and cell therapies and other high-cost pharmaceutical treatment options that can impact our clients' bottom lines. The Pharmacy Operations (RxOps) team watches the market — and our book of business — to anticipate how current and future advancements will impact financial risk levels for HM's client base. Standard practices include reviewing, auditing and collaborating on the content of current policies, monitoring trends and implementing appropriate cost-savings techniques. Additional practices include the prevention of stockpiling, working to ensure prescriptions are filled via in-network pharmacies and assessing to determine if patients are properly dosed based on weight and lab values when appropriate. All of these services are provided to HM's clients at no additional cost to them.

Pharmacy Focus provides valuable information about pharmaceutical industry developments and their associated costs that can impact the growing claims trend in the self-funded insurance market. Be aware of influences and gain insight into approaches that may help to contain costs. Please share topic suggestions or feedback with **HMPharmacyServices@hmig.com**.

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Resources: [1]Duchenne Muscular Dystrophy, Genetic and Rare Disease Information Center, https://rarediseases.info.nih.gov/diseases/ 6291/duchenne-muscular-dystrophy, accessed June 26, 2023; [2]Understanding Duchenne, Duchenne.com, https://www.duchenne.com/about-duchenne, accessed June 26, 2023; [3]Muscular Dystrophy Association Celebrates FDA Approval of Sarepta Therapeutics' ELEVIDYS for Treatment of Duchenne Muscular Dystrophy, Muscular Dystrophy Association, https://www.mda.org/press-releases/mda-celebrates-fda-approval-of-sarepta-therapeutics-elevidys-for-treatment-of-duchenne-muscular-dystrophy, accessed June 22, 2023; [4]Matthews M., Brassington R., Kuntzer T., et al, Corticosteroids for the Treatment of Duchenne Muscular Dystrophy, Cochrane Database of Systematic Reviews 2016, Issue 5. Art. No.: CD003725. DOI: 10.1002/14651858.CD003725.pub4; [5]Emflaza Prescribing information: https://emflaza.com/wp-content/uploads/2020/10/prescribing-information.pdf; [6]Deflazacort, In: Lexi-Drugs, Lexi-Comp, Inc., https://www.crlonline.com.authenticate.library.duq.edu/lco/action/doc/ retrieve/docid/patch_f/4854435?ceside=4MOq2NqtNkb&searchUrl=%2Flco%2Faction%Fsearch%3Fq%Ddeflazacort%26t%2Dname%26va%3Ddeflazacort, accessed June 26, 2023; [7]Exondys 51 Prescribing information: https://www.exondys51hcp.com/sites/default/files/2020-08/EXONDYS51PI.pdf; [8]Eteplirsen, In: Lexi-Drugs, Lexi-Comp, Inc., http://www.crlonline.com.authenticate.library.duq.edu/lco/action/doc/retrieve/docid/ patch_f/6309682?cesid=5Auo67FIIUi$searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Deteplirsen%26t%3Dname%26va%3Deteplirsen, accessed June 26, 2023; [9]Vyondys 53 Prescribing information: https://www.vyondys53.com/static/patient/assets/Vyondys53_(golodirsen)_Prescribing_ Information.pdf; [10]Golodirsen, In: Lexi-Drugs. Lexi-Comp, Inc., http://www.crlonline.com.authenticate.library.duq.edu/ lco/action/doc/retrieve/docid/patch_f/6891478?cesid=7YjU7VoS29w&searchUrl=%2Flco%2Fraction%2Fsearch%3Fq%3Dgolodirsen%26t%3Dname%26va%3Dgolodirsen, accessed June 26, 2023; [11]Viltepso Prescribing information: https://www.viltepso.com/prescribing-information; [12]Viltepso, In: Lexi-Drugs, Lexi-Comp, Inc., http://www.crlonline.com.authenticate.library.duq.edu/lco/action/doc/retrieve/ docid/patch_f/6984611?cesid=15KenwEMURS&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3DViltepso%26t%3Dname%26va%3DViltepso, accessed June 26, 2023; [13]Amondys 45 Prescribing Information: https://amondys45.com/Amondys45 _(casimersen)_Prescribing_Information.pdf; [14]Sarepta Therapeutics Announces FDA Acceptance of Casimersen (SRP-4045) New Drug Application for Patients with Duchenne Muscular Dystrophy Amenable to Skipping Exon 45, GlobeNewswire, updated August 25, 2020, https://www.globenewswire.com/news-release/2020/08/25/2083264/0/ en/Sarepta-Therapeutics-Announces-FDA-Acceptance-of-Casimersen-SRP-4045-New-Drug-Application-for-Patients-with-Duchenne-MuscularDystrophy-Amenable-to-Skipping-Exon-45.html, accessed February 22, 2021; [15]CNS: Duchenne Muscular Dystrophy (ipdanalytics.com), accessed May 9, 2023; [16]Wexler, M. (March 23, 2023), MDA 2023: SRP-9001 Trial Data Show Long-Term Gains in DMD, Muscular Dystrophy News, https://musculardystrophynews.com/news/mda-2023-srp-9001-trial-data-show-long-term-gains-dmd/#:~:text=Results%20showed%20that%20the%20average,external%20group%20of%20similar%20patients, accessed June 26, 2023; [17]Calabro, J. (March 7, 2023), Long-term Safety and Efficacy in Patients with DMD 4 Years Post-Treatment with Delandistrogene Moxeparvovec: a Phase 1/2a, MDA Clinical & Scientific Conference 2023, https://www.mdaconference.org/abstract-library/long-term-safety-and-sustained-functional-benefit-in-patients-with-dmd-4-years-post-treatment-with-delandistrogene-moxeparvovec-in-a-phase-1-2a-study/, accessed May 11, 2023; [18]Elevidys Prescribing information: Package Insert - ELEVIDYS (fda.gov); [19]FDA Approves First Gene Therapy for Treatment of Certain Patients with Duchenne Muscular Dystrophy, Food & Drug Administration, June 22, 2023; [20]Fidler, B., Sarepta Prices Duchenne Gene Therapy at $3.2M, BioPharma Dive, https://www.biopharmadive.com/news/sarepta-duchenne-elevidys-price-million-gene-therapy/653720/, accessed June 22, 2023.

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