Pharmacy Focus:
Duchenne Muscular Dystrophy (DMD) Treatment

Overview[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 more recently has been estimated to occur in approximately 16 per 100,000 live male births in the United States. The disease is almost exclusive to biologic 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 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 the 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.

Treatment Options

Drug Name	Dosing	How It Works	Place in Therapy	Price	HCPCS Code
Prednisone and **Prednisolone**[3]	0.75 mcg/kg/day by mouth	Glucocorticoid steroid that exerts anti-inflammatory and immunosuppressive effects; also helps preserve muscle in people with DMD	Off-label use for Duchenne muscular dystrophy	**Approximately $1,300/year** (based on a 30 kg child) **Approximately $3,000/year** (based on an average adult male)	Prescription Benefits
Emflaza® (Deflaza ort)[4,5]	0.9 mg/kg by mouth once daily	Glucocorticoid steroid that exerts anti-inflammatory and immunosuppressive effects; also helps preserve muscle in people with DMD	FDA approved for people with Duchenne muscular dystrophy, ages 2 and older	**Approximately $1,000/year** (based on a 30 kg child) **>$200,000/year** (based on an average adult male)	Prescription Benefits

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Treatment Options, continued

Drug Name	Dosing	How It Works	Place in Therapy	Price	HCPCS Code
Exondys 51® (Eteplirsen)[6,7]	30 mg/kg IV once weekly	Using exon-skipping technology, Exondys 51® "mends" the broken exon chain by skipping exon 51 to connect the exons before and after it; this may result in the production of dystrophin in skeletal muscle	FDA approved for people with a confirmed mutation in the DMD gene amenable to exon 51 skipping	**Approximately $900,000/year** (based on a 30 kg child) **>$2,000,000/year** (based on an average adult male)	J1428
Vyondys 53® (Golodirsen)[8,9]	30 mg/kg IV once weekly	Using exon-skipping technology, Vyondys 53® "mends" the broken exon chain by skipping exon 53 to connect the exons before and after it; this may result in the production of dystrophin in skeletal muscle	FDA approved for people with a confirmed mutation in the DMD gene amenable to exon 53 skipping	**Approximately $900,000/year** (based on a 30 kg child) **>$2,000,000/year** (based on an average adult male)	J1429
Viltepso® (Viltolarsen)[10,11]	80 mg/kg IV once weekly	Using exon-skipping technology, Viltepso® "mends" the broken exon chain by skipping exon 53 to connect the exons before and after it; this may result in the production of dystrophin in skeletal muscle	FDA approved for people with a confirmed mutation in the DMD gene amenable to exon 53 skipping	**Approximately $850,000/year** (based on a 30 kg child) **>$2,000,000/year** (based on an average adult male)	3490 C9071
Amondys 45™ (Casimersen)[12]	30 mg/kg IV once weekly	Using exon-skipping technology, Amondys 45™ "mends" the broken exon chain by skipping exon 45 to connect the exons before and after it; this may result in the production of dystrophin in skeletal muscle[13]	FDA approved for people with a confirmed mutation in the DMD gene amenable to exon 45 skipping	**Approximately $900,000/year** (based on a 30 kg child) **>$2,000,000/year** (based on an average adult male)	J3490 C9399

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HMConnects™ Observations & Recommendations

Through our HMConnects™ cost containment program, we work to provide insight into ways to better control scenarios driving high-dollar medical and pharmaceutical claims. Awareness is essential in these efforts to help contain costs.

With regard to Duchenne muscular dystrophy, it's important to be mindful of the additional risks involved with certain treatment options. **Such risks can include:**

- Potentially fatal kidney toxicities are a side effect associated with the exon-skipping therapies class and require monitoring per the FDA
- Serious infections (more than 2% of all infections), such as bacteremia/sepsis, occur with this class of therapies and are attributed to:
  - Ports/devices that are used during the weekly intravenous infusions
  - Chronic corticosteroid use
  - The overall debilitating condition of the disease[14]

It's also important to be aware that exon-skipping therapies (e.g., Exondys 51®, Vyondys 53®, Viltepso® and Amondys 45™) are considered non-formulary; however, most administrators have processes that would approve the product once the patient is deemed eligible. Because these therapies are currently administered as weekly infusions, "Site of Care" or "Location of Care" opportunities should be considered as part of cost management strategies.

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**.

Resources: Sources: [1]Duchenne Muscular Dystrophy, Genetic and Rare Disease Information Center, https://rarediseases.info.nih.gov/diseases/6291/duchenne-muscular-dystrophy, accessed February 18, 2021; [2]Understanding Duchenne, Duchenne.com, https://www.duchenne.com/about-duchenne, accessed February 18, 2021; [3]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; [4]Emflaza Prescribing information: https://emflaza.com/wp-content/uploads/2020/10/prescribing-information.pdf; [5]Deflazacort, In: Lexi-Drugs, Lexi-Comp, Inc., updated February 18, 2021, accessed February 18, 2021, 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%3D-deflazacort; [6]Exondys 51 Prescribing information: https://www.exondys51hcp.com/sites/default/files/2020-08/EXONDYS51PI.pdf; [7]Eteplirsen, In: Lexi-Drugs, Lexi-Comp, Inc., updated November 13, 2021, http://www.crlonline.com.authenticate.library.duq.edu/lco/action/doc/retrieve/docid/patch_f/6309682?cesid=5Auo67FIlUi$searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Deteplirsen%26t%3Dname%26va%3Deteplirsen, accessed February 18, 2021; [8]Vyondys 53 Prescribing information: https://www.vyondys53.com/static/patient/assets/Vyondys53_(golodirsen)_Prescribing_Information.pdf; [9]Golodirsen, In: Lexi-Drugs. Lexi-Comp, Inc., updated October 24, 2020, 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%3D-name%26va%3Dgolodirsen, accessed February 18, 2021; [10]Viltepso Prescribing information: https://www.viltepso.com/prescribing-information; [11]Viltepso, In: Lexi-Drugs, Lexi-Comp, Inc., updated February 2, 2021, 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 February 18, 2021; [12]Amondys 45 Prescribing Information: https://amondys45.com/Amondys45 _(casimersen)_Prescribing_Information.pdf; [13]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-Muscular-Dystrophy-Amenable-to-Skipping-Exon-45.html, accessed February 22, 2021; [14]Center for Drug Evaluation and Research, Action Letter, Food and Drug Administration, https://www.accessdata.fda.gov/drugsatfda_docs/nda/2019/211970Orig1s000OtherActionLtrs.pdf, accessed March 8, 2021.

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