EMPOWERING FAMILIES WITH INFORMATION AND INSPIRATION

Quest

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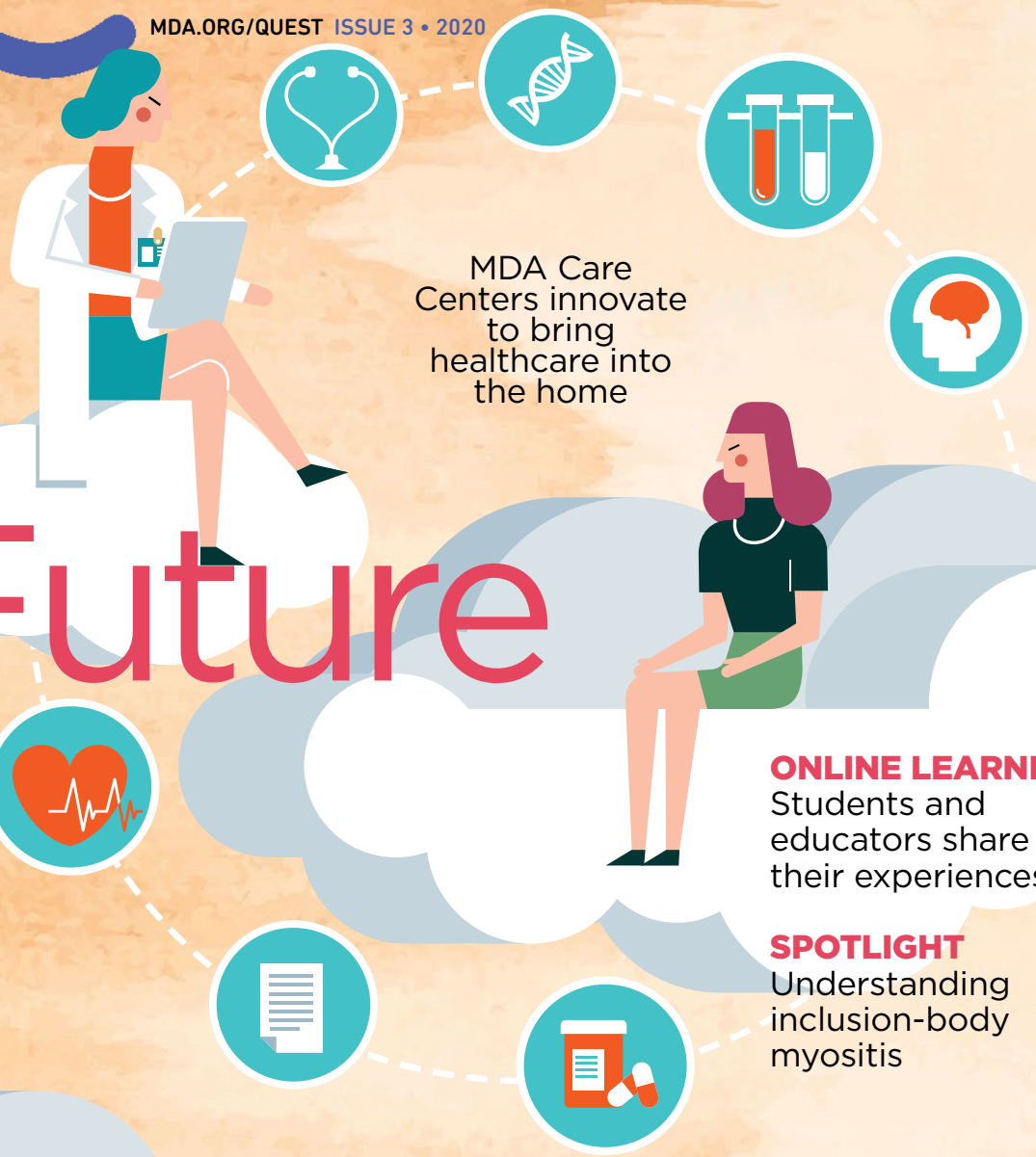

MDA Care Centers innovate to bring healthcare into the home

The Way of the Future

ONLINE LEARNING
Students and educators share their experiences

SPOTLIGHT
Understanding inclusion-body myositis

MDA® Muscular Dystrophy Association

MDA Muscular Dystrophy Association

MDA is committed to transforming the lives of people affected by muscular dystrophy, ALS, and related neuromuscular diseases through innovations in science and innovations in care.

EDITORIAL
Lindsey Baker
Quest Editor-in-Chief and General Manager
For editorial inquiries:
quest@mdausa.org

ADVERTISING
Ali Mozenter
For print and digital advertising opportunities:
mdapartners@mdausa.org

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The Power of Adaptation

If there's anything I'm certain people living with neuromuscular disease know, it's how to adapt when faced with change. This year, in more ways than most, has asked us all to change in significant, challenging, maybe forever ways.


Lindsey Baker

In life, we adapt because we must if we want to keep on living. If we need to learn new ways to get dressed or need to get different tools to cook dinner or need to rethink how we move from one place to another, we do. These are not easy transitions, in body or in mind. We experience frustration and loss.

But we can find new advantages. Maybe we gain new energy (or find new, more productive ways to use the energy we have). Certainly, we gain new insight.

In this issue of *Quest*, we're sharing the ways MDA and all of us have adapted as the novel coronavirus pandemic reshaped our day-to-day. Our Care Center teams shifted to telehealth and at-home therapy and routines to maintain care. Families adjusted to online learning, often as parents themselves worked from home. Unable to coordinate our usual in-person fundraising events, MDA reimagined our historic Telethon as a modern showcase of the incredible people in our community.

This year, many of us living with neuromuscular disease and disability have found empathy from others who have freshly experienced a sense of isolation. We've found inclusion in options to attend events online and work remotely. There's been opportunity even in the midst of loss.

By the time you read this, the world will be changing again. We'll have gone through a presidential election cycle. We'll be, I hope, closer to an effective, available COVID-19 vaccine.

Wherever we are, wherever we're headed, this year has proven one thing: We can adapt. We can keep living.

Sincerely,

Lindsey Baker
Quest *Editor-in-Chief and General Manager*
Muscular Dystrophy Association

Julie MacIntyre (right) won our reader photo contest with an uplifting entry.

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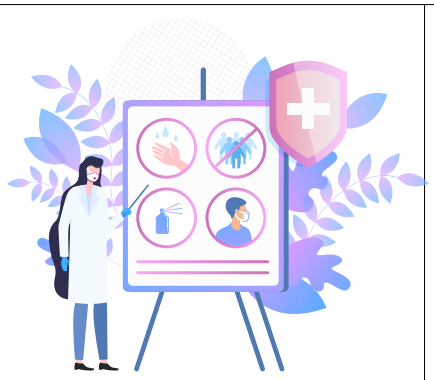

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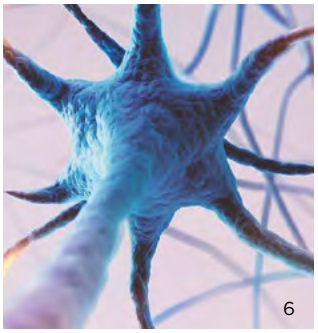
DEPARTMENTS



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ONLINE

QUEST NEWSLETTER
Get *Quest* content, online-exclusive articles, and information about educational resources and events for MDA's community delivered right to your inbox in our monthly digital *Quest* Newsletter. Subscribe at **mda.org/quest/subscribe**.

SHOPPING FOR A CAUSE
Did you know there's an easy way to support MDA while doing your holiday shopping or stocking up on essentials? Go to **smile.amazon.com** and choose MDA as your charity of choice. MDA will receive a donation for every eligible purchase you make when you shop through **smile.amazon.com**.

Image: iStock.com/Veronika Oliinyk

MDA-068

Accessible Education Opportunities

At MDA, we aim to bring you knowledge and resources that are accessible and easy to understand. MDA's Engage community education program gives you access to a variety of important, up-to-date, and relevant educational content.

As we approach 2021, you can expect more impactful, high-quality virtual programming. Whether you have participated in Engage events in the past or are new to this program, we invite you to explore our excellent 2021 educational programming.

MDA Engage Seminars

These presentations cover medical content that spans the neuromuscular disease community. In 2021, we're planning seminars specific to children and adults, as well as individuals transitioning to adulthood. You also will find a seminar designed for the caregiver community.

Upcoming MDA Engage Events

Event	Date	Focused audience
Engage Community Education Seminar	Feb. 6, 2021	Pediatric neuromuscular diseases
Engage Mitochondrial Myopathy Symposium	March 6, 2021	Mitochondrial myopathy

MDA FACEBOOK LIVE

Join MDA on our Facebook channel for conversations on important topics that impact the neuromuscular disease community. MDA's Facebook Live series features moderated discussions with families and key opinion leaders on topics from COVID-19 to mental health to research and more.

Facebook Live events happen throughout the year. You can be part of the conversation by asking questions in the comments section of Facebook Live posts.

Like and follow @MDAOrg to find details on upcoming Facebook Live events and view past events.

MDA Engage Disease Symposia

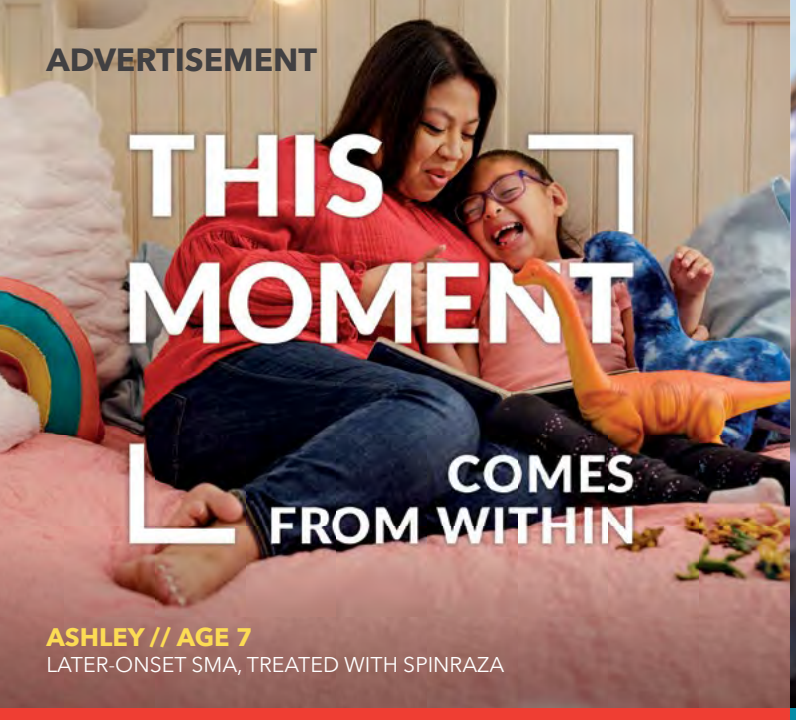
Each virtual symposium focuses on a diagnosis. Experts in the disease community present information on medical management for the diagnosis, provide updates on clinical trials, and hold discussions on the treatment pipeline. In 2021, Disease Symposia will be held for mitochondrial myopathy, myotonic dystrophy, amyotrophic lateral sclerosis, limb-girdle muscular dystrophy, Duchenne muscular dystrophy, myasthenia gravis, and spinal muscular atrophy.

+FREE TO ATTEND

There is no cost for members of the neuromuscular community and healthcare providers to attend MDA Engage events. To find upcoming activities and watch past events, visit **mda.org/engage**.

MDA Engage Webinars

These educational sessions focus on a single topic and are presented by experts in the field. Engage webinars cover a variety of topics, from independent living, colleges, careers, and family planning to disease-specific topics. Webinars can be viewed live and on-demand.



Individual results may vary based on several factors, including severity of disease, initiation of treatment, and duration of therapy.

Victories are personal for the **10,000+** who have been treated with SPINRAZA worldwide.*

For US individuals taking SPINRAZA:

40%

>40% of patients taking SPINRAZA are adults*

3-80
DAYS YEARS

Has treated SMA in patients 3 days† to 80 years old‡§

90%

>90% of patients who started SPINRAZA remain on treatment‡

*Based on commercial patients, early access patients, and clinical trial participants through December 2019.
†Includes clinical trial patients.
‡Based on commercial patients in the US (including Puerto Rico) through December 2019.
§Clinical studies of SPINRAZA did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger patients.

INDICATION
SPINRAZA® (nusinersen) is a prescription medicine used to treat spinal muscular atrophy (SMA) in pediatric and adult patients.

IMPORTANT SAFETY INFORMATION
Increased risk of bleeding complications has been observed after administration of similar medicines. Your healthcare provider should perform blood tests before you start treatment with SPINRAZA and before each dose to monitor for signs of these risks. Seek medical attention if unexpected bleeding occurs.

Increased risk of kidney damage, including potentially fatal acute inflammation of the kidney, has been observed after administration of similar medicines. Your healthcare provider should perform urine testing before you start treatment with SPINRAZA and before each dose to monitor for signs of this risk.

The most common side effects of SPINRAZA include lower respiratory infection, fever, constipation, headache, vomiting, back pain, and post-lumbar puncture syndrome.

These are not all of the possible side effects of SPINRAZA. Call your healthcare provider for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

Before taking SPINRAZA, tell your healthcare provider if you are pregnant or plan to become pregnant.

Please see full Prescribing Information on SPINRAZA.com.

This information is not intended to replace discussions with your healthcare provider.

SPINRAZA®
(nusinersen) injection 12 mg/5 mL

Individual results may vary based on several factors, including severity of disease, initiation of treatment, and duration of therapy.

Learn more at SPINRAZA.com

IMPORTANT FACTS ABOUT SPINRAZA® (nusinersen)

USES

SPINRAZA is a prescription medicine used to treat spinal muscular atrophy (SMA) in pediatric and adult patients.

WARNINGS

Increased risk of bleeding complications has been observed after administration of similar medicines. Your healthcare provider should perform blood tests before you start treatment with SPINRAZA and before each dose to monitor for signs of these risks. Seek medical attention if unexpected bleeding occurs.

Increased risk of kidney damage, including potentially fatal acute inflammation of the kidney, has been observed after administration of similar medicines. Your healthcare provider should perform urine testing before you start treatment with SPINRAZA and before each dose to monitor for signs of this risk.

COMMON SIDE EFFECTS

- **The most common side effects of SPINRAZA include** lower respiratory infection, fever, constipation, headache, vomiting, back pain, and post-lumbar puncture syndrome (headache related to the intrathecal procedure).
- Serious side effects of complete or partial collapse of a lung or lobe of a lung have been reported.

Talk to your healthcare provider about any side effect that bothers you or that does not go away.

OTHER INFORMATION

SPINRAZA is a medication that should be administered as an injection into the lower back (a procedure called intrathecal injection) by, or under the direction of, an experienced healthcare professional.

Before taking SPINRAZA, tell your healthcare provider if you are pregnant or plan to become pregnant.

QUESTIONS?

The risk information provided here is not comprehensive. To learn more, talk about SPINRAZA with your healthcare provider or pharmacist. The FDA-approved product labeling can be found at www.SPINRAZA.com or 1-844-4SPINRAZA (1-844-477-4672).

MANUFACTURED FOR

Biogen, Cambridge, MA 02142

Biogen

225 Binney Street, Cambridge, MA 02142

PROGRESS NOW

Tracking research updates and breakthroughs that help accelerate treatments and cures across MDA diseases

Amyotrophic lateral sclerosis (ALS)

Tofersen Trial Moves to Phase 3

Biogen announced positive results from its phase 1/2 clinical trial of the investigational therapy tofersen (BIIB067) for treatment of ALS caused by mutation of the superoxide dismutase 1 gene (*SOD1*).

Tofersen is an antisense oligonucleotide (ASO) therapy, which reduces the production of new SOD1 protein in cells.

In the trial, 50 participants with *SOD1* ALS were randomly selected to receive five doses of tofersen or a placebo through injection into the cerebrospinal fluid (CSF) over a 12-week period.

Results of the study's primary goals — assessment of safety, tolerability, and drug dynamics in the body — were encouraging. Data indicated that the drug lowered clinical markers of disease, such as SOD1 protein levels in the CSF surrounding the brain and spinal cord. In addition, the results suggested that tofersen treatment may slow functional decline of patients, as assessed by the ALS Functional Rating Scale Revised (ALSFRS-R), pulmonary function testing, and examination of muscle strength.

ALS caused by *SOD1* gene mutations accounts for 2% of all ALS cases.

Biogen is continuing to provide tofersen to participants in the phase 1/2 trial under an open-label extension period as evaluation of the drug continues. Additional individuals are currently being enrolled in a phase 3 trial (VALOR) to further assess safety and effectiveness.

For information about the phase 3 clinical trial, visit clinicaltrials.gov and enter NCT02623699 in the "Other terms" search box.

+RESEARCH GOES ON

Learn how clinical trials are continuing during the novel coronavirus pandemic in the online exclusive article "Clinical Trials During COVID-19" at **mda.org/quest**.

Images: iStock.com/cokada/anusorn nakdee

Duchenne muscular dystrophy (DMD)

Accelerated FDA Approval for Viltepso

Viltepso is the third exon-skipping, disease-modifying drug approved to treat DMD.

Image: iStock.com/Davizro

The US Food and Drug Administration (FDA) has granted accelerated approval to viltolarsen (Viltepso) for the treatment of DMD in patients amenable to skipping exon 53. Administered by intravenous (IV) infusion, Viltepso is marketed in the US by NS Pharma.

DMD is caused by mutations in the dystrophin gene (DMD) that result in little or no production of dystrophin, a protein essential to keeping muscle cells intact. Exon skipping is a treatment strategy in which sections of genetic code are skipped over during the protein-making process, allowing cells to create shortened but partially functional dystrophin protein. Viltepso uses NS Pharma's exon-skipping technology to target exon 53 of the DMD gene.

Although the treatment is not a cure, it could slow progression of the disease in up to 8% of DMD patients, potentially extending the length of time individuals with DMD could walk, eat independently, and breathe without assistance.

The FDA based its decision to grant accelerated approval to Viltepso on the results of a phase 2 study to assess safety, tolerability, and dose, followed by a 20-week open-label treatment period, in 16 ambulant (able-to-walk) boys 4 to 9 years old with DMD. At the end of the study, treatment with Viltepso was associated with significant increases in dystrophin protein levels. Additionally, all participants who received Viltepso showed significant improvements in timed function tests at the 25-week visit.

Under the FDA's accelerated approval process, the continued approval of Viltepso may be contingent on confirmation of a clinical benefit in a post-marketing confirmatory trial (RACER53), which is currently enrolling and expected to conclude by 2024.

Individuals interested in Viltepso can get help navigating the process of starting and staying on therapy through the NS Support patient support program. Call **833-677-8778**, Monday through Friday, 8 a.m. to 8 p.m. ET.

For information about the RACER53 clinical trial, visit clinicaltrials.gov and enter NCT04060199 in the "Other terms" search box.

FDA Accepts New Drug Application for Casimersen

The FDA has accepted Sarepta Therapeutics' rolling New Drug Application (NDA) for accelerated approval of its DMD treatment casimersen (SRP-4045). An exon-skipping therapy, casimersen is designed to treat DMD in individuals who have genetic mutations amenable to skipping exon 45 of the *DMD* gene — approximately 8% of DMD patients. The FDA has granted priority review of the NDA, with a decision expected by Feb. 25, 2021, and has conditionally approved the brand name for the drug: Amondys 45.

"Together with our other approved therapies, we have the potential to treat nearly 30% of Duchenne patients in the United States," says Doug Ingram, president and chief executive officer at Sarepta Therapeutics.

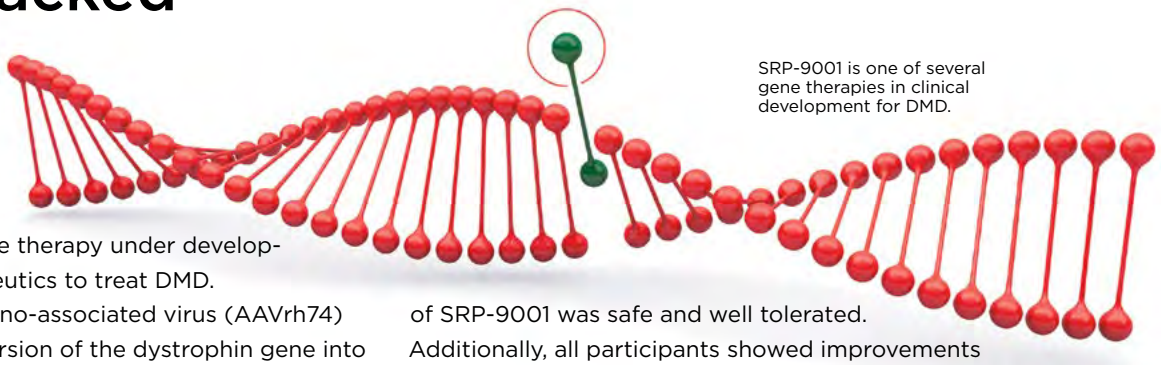
The FDA is reviewing the casimersen data from ESSENCE, a global phase 3 study evaluating safety and efficacy in DMD patients. Interim results from ESSENCE showed a significant increase in dystrophin protein production in participants who received casimersen as compared to baseline and those who received a placebo.

ESSENCE is ongoing. If casimersen receives accelerated approval, its completion will serve as a post-marketing confirmatory study.

For information about the ESSENCE clinical trial, visit clinicaltrials.gov and enter NCT02500381 in the "Other terms" search box.

Duchenne muscular dystrophy (DMD)

Micro-Dystrophin Gene Therapy Is Fast-Tracked



SRP-9001 is one of several gene therapies in clinical development for DMD.

Image: iStock.com/Devrimb

The US Food and Drug Administration (FDA) has granted Fast Track designation to SRP-9001 (AAVrh74.MHCK7. micro-dystrophin), a gene therapy under development by Sarepta Therapeutics to treat DMD.

SRP-9001 uses an adeno-associated virus (AAVrh74) to deliver a shortened version of the dystrophin gene into muscle tissue of individuals with DMD, where it is meant to partially compensate for the lack of a functional *DMD* gene.

The Fast Track designation is designed to expedite the development and review of drugs that treat serious conditions and fill unmet medical needs.

Data from four participants in a phase 1/2a study of SRP-9001 indicated that a single intravenous (IV) infusion of SRP-9001 was safe and well tolerated. Additionally, all participants showed improvements across multiple endpoints, including increased micro-dystrophin protein in muscle fibers. Study 102, a placebo-controlled study of SRP-9001, is ongoing with results expected in early 2021.

To learn more about the phase 2 study (Study 102), visit clinicaltrials.gov and enter NCT03769116 in the "Other terms" search box.

Spinal muscular atrophy (SMA)

FDA Approves Evrysdi

The US Food and Drug Administration (FDA) has approved risdiplam (Evrysdi) for the treatment of SMA in children and adults. It marks the third disease-modifying therapy approved to treat SMA, the leading genetic cause of infant death. A liquid taken by mouth, Evrysdi is the first SMA medicine that can be taken at home and is designed to be taken daily for life.

Evrysdi is marketed in the United States by Genentech, a Roche company.

In SMA, a mutated or missing survival motor neuron 1 gene (*SMN1*) renders the body unable to make enough SMN protein. An *SMN2* "backup" gene exists but is not fully functional. Evrysdi helps the *SMN2* gene produce more functional SMN protein.

The FDA based its decision to approve Evrysdi on results from the pivotal phase 2/3 FIREFISH and SUNFISH clinical trials.

In FIREFISH, 21 infants ages 1 to 7 months with SMA type 1 achieved milestones that typically would not be reached without treatment. In Part 2, some of the 41 infant participants were able to sit without support for at least five seconds at 12 months of treatment.

Results from SUNFISH Part 1, which tested Evrysdi in a total of 180 patients ages 2 to 25 years with SMA types 2 or 3, showed that treatment with Evrysdi led to increased levels of SMN protein in the blood after one year of treatment. In Part 2, improvements in motor function were significantly greater in participants treated with Evrysdi compared to placebo.

Evrysdi currently is being evaluated in four SMA clinical trials.

Roche Genentech's MySMA Support program team is available to answer questions, provide product education, and help families understand insurance coverage and navigate appropriate financial assistance options to start and stay on Evrysdi. Call **833-EVRYSDI** or visit **Evrysdi.com** or **Genentech-Access.com** to learn more.

To learn more about the FIREFISH, SUNFISH, JEWELFISH, and RAINBOWFISH trials, visit clinicaltrials.gov and enter NCT02913482, NCT02908685, NCT03032172, and NCT03779334, respectively, in the "Other terms" search box.

Image: iStock.com/ipopba

VYONDYS 53
(golodirsen) Injection

DISCOVER VYONDYS 53

A treatment for Duchenne muscular dystrophy (DMD) in patients amenable to skipping exon 53

Duchenne is caused by mutations or errors in the *DMD* gene that prevent the body from producing the protein dystrophin, which is needed for muscles to work properly

VYONDYS 53 is an exon-skipping therapy. The goal of exon skipping is to allow the body to make a shorter form of the dystrophin protein

Under FDA accelerated approval, production of the protein dystrophin in skeletal muscle was accepted as a surrogate endpoint because it is reasonably likely to predict a meaningful clinical benefit. Continued approval of VYONDYS 53 may be contingent upon verification of a clinical benefit in confirmatory trials.

Speak to your doctor to find out if VYONDYS 53 is right for you. To learn more, visit VYONDYS53.com

INDICATION

VYONDYS 53 is used to treat patients with Duchenne muscular dystrophy (DMD) who have a confirmed mutation in the dystrophin gene that can be treated by skipping exon 53.

This indication is approved under accelerated approval based on an increase in dystrophin production in skeletal muscle observed in patients treated with VYONDYS 53. Continued approval for this indication may be contingent upon verification of a clinical benefit in confirmatory trials.

IMPORTANT RISK INFORMATION

- Allergic reactions, including rash, fever, itching, hives, and inflammation and/or peeling of the skin have occurred in patients who were treated with VYONDYS 53. Seek immediate medical care if signs and symptoms of allergic reactions occur.
- Damage to the kidneys was seen in animals who received golodirsen. Although damage to the kidneys was not seen in clinical studies with VYONDYS 53, potentially fatal kidney damage has occurred with other drugs that work in a similar way. Your doctor may recommend urine collection and blood testing before starting treatment followed by urine testing every month and a blood test every 3 months to monitor your kidneys.
- Adverse reactions that have occurred in at least 20% of patients treated with VYONDYS 53 and more often than in patients who received an inactive intravenous (IV) infusion were headache (41%, 10%), fever (41%, 14%), fall (29%, 19%), pain in the abdomen (27%, 10%), infection of the nose and throat (27%, 14%), cough (27%, 19%), vomiting (27%, 19%), and nausea (20%, 10%).
- Other adverse reactions that occurred in greater than 5% of patients treated with VYONDYS 53 and more often than in patients who received an inactive IV infusion were pain at the IV site, back pain, pain, diarrhea, dizziness, stretch or tear in a ligament, bruising, flu, pain in the mouth and throat, stuffy or runny nose, scrapes or scratches of the skin, ear infection, seasonal allergy, fast heartbeat, reactions related to the IV catheter site, constipation, and broken bones.
- **You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088. You may also report side effects to Sarepta Therapeutics at 1-888-SAREPTA (1-888-727-3782).**

Please see the brief summary of Prescribing Information for VYONDYS 53 on the adjacent page.

SAREPTA THERAPEUTICS

VYONDYS 53 (golodirsen) Injection 50 mg/mL (100 mg/2 mL) Brief Summary

INDICATIONS AND USAGE: VYONDYS 53 is an antisense oligonucleotide indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the *DMD* gene that is amenable to exon 53 skipping. This indication is approved under accelerated approval based on an increase in dystrophin production in skeletal muscle observed in patients treated with VYONDYS 53. Continued approval for this indication may be contingent upon verification of a clinical benefit in confirmatory trials.

CONTRAINDICATIONS: None.

WARNINGS AND PRECAUTIONS: Hypersensitivity Reactions: Hypersensitivity reactions, including rash, pyrexia, pruritus, urticaria, dermatitis, and skin exfoliation have occurred in VYONDYS 53-treated patients, some requiring treatment. If a hypersensitivity reaction occurs, institute appropriate medical treatment and consider slowing the infusion or interrupting the VYONDYS 53 therapy.

Renal Toxicity: Renal toxicity was observed in animals who received golodirsen. Although renal toxicity was not observed in the clinical studies with VYONDYS 53, renal toxicity, including potentially fatal glomerulonephritis, has been observed after administration of some antisense oligonucleotides. Renal function should be monitored in patients taking VYONDYS 53. Because of the effect of reduced skeletal muscle mass on creatinine measurements, creatinine may not be a reliable measure of renal function in DMD patients. Measurement of glomerular filtration rate (GFR) by 24-hour urine collection prior to initiation of therapy is recommended. Monthly monitoring for proteinuria by dipstick urinalysis and monitoring of serum cystatin C every three months is recommended. In the case of a confirmed dipstick proteinuria of 2+ or greater or elevated serum cystatin C, a 24-hour urine collection to quantify proteinuria and assess GFR should be performed.

ADVERSE REACTIONS: Clinical Trials Experience: Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

In the VYONDYS 53 clinical development program, 58 patients received at least one intravenous dose of VYONDYS 53, ranging between 4 mg/kg (0.13 times the recommended dosage) and 30 mg/kg (the recommended dosage). All patients were male and had genetically confirmed Duchenne muscular dystrophy. Age at study entry was 6 to 13 years. Most (86%) patients were Caucasian.

VYONDYS 53 was studied in 2 double-blind, placebo-controlled studies.

In Study 1 Part 1, patients were randomized to receive once-weekly intravenous infusions of VYONDYS 53 (n=8) in four increasing dose levels from 4 mg/kg to 30 mg/kg or placebo (n=4), for at least 2 weeks at each level. All patients who participated in Study 1 Part 1 (n=12) were continued into Study 1 Part 2, an open-label extension, during which they received VYONDYS 53 at a dose of 30 mg/kg IV once weekly.

In Study 2, patients received VYONDYS 53 (n=33) 30 mg/kg or placebo (n=17) IV once weekly for up to 96 weeks, after which all patients received VYONDYS 53 at a dose of 30 mg/kg.

Adverse reactions observed in at least 20% of treated patients in the placebo-controlled sections of Studies 1 and 2 were (VYONDYS 53 [N=41]%, Placebo [N=21]%): headache (41, 10), pyrexia (41, 14), fall (29, 19), abdominal pain (27, 10), nasopharyngitis (27, 14), cough (27, 19), vomiting (27, 19), and nausea (20, 10).

Other adverse reactions that occurred at a frequency greater than 5% of VYONDYS 53-treated patients and at a greater frequency than placebo were: administration site pain, back pain, pain, diarrhea, dizziness, ligament sprain, contusion, influenza, oropharyngeal pain, rhinitis, skin abrasion, ear infection, seasonal allergy, tachycardia, catheter site related reaction, constipation, and fracture.

Hypersensitivity reactions have occurred in patients treated with VYONDYS 53.

USE IN SPECIFIC POPULATIONS: Pregnancy: Risk Summary: There are no human or animal data available to assess the use of VYONDYS 53 during pregnancy. In the U.S. general population, major birth defects occur in 2 to 4% and miscarriage occurs in 15 to 20% of clinically recognized pregnancies.

Lactation: Risk Summary: There are no human or animal data to assess the effect of VYONDYS 53 on milk production, the presence of golodirsen in milk, or the effects of VYONDYS 53 on the breastfed infant.

The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for VYONDYS 53 and any potential adverse effects on the breastfed infant from VYONDYS 53 or from the underlying maternal condition.

Pediatric Use: VYONDYS 53 is indicated for the treatment of Duchenne muscular dystrophy (DMD) in patients who have a confirmed mutation of the *DMD* gene that is amenable to exon 53 skipping, including pediatric patients.

Intravenous administration of golodirsen (0, 100, 300, or 900 mg/kg) to juvenile male rats once weekly for 10 weeks (postnatal days 14 to 77) did not result in postnatal developmental (e.g., neurobehavioral, immune function, or male reproductive) toxicity. However, at the highest dose tested (900 mg/kg/week), golodirsen resulted in the death of animals because of renal impairment or failure. In surviving animals (including one animal at the lowest dose tested), there was a dose-dependent increase in the incidence and severity of renal tubular effects (including degeneration/regeneration, fibrosis, vacuolation, and dilatation), which correlated with changes in clinical pathology parameters, reflecting a dose-dependent impairment of renal function. In addition, decreases in bone area, mineral content, and mineral density were observed at the highest dose tested (900 mg/kg week) but with no effect on bone growth. A no-effect dose for renal toxicity was not identified; the lowest dose tested (100 mg/kg/week) was associated with plasma exposures (AUC) approximately 2.5 times that in humans at the recommended human dose of 30 mg/kg/week.

Geriatric Use: DMD is largely a disease of children and young adults; therefore, there is no geriatric experience with VYONDYS 53.

Patients with Renal Impairment: Renal clearance of golodirsen is reduced in non-DMD adults with renal impairment, based on estimated glomerular filtration rate calculated using the Modification of Diet and Renal Disease (MDRD) equation. However, because of the effect of reduced skeletal muscle mass on creatinine measurements in DMD patients, no specific dosage adjustment can be recommended for DMD patients with renal impairment based on estimated glomerular filtration rate. Patients with known renal function impairment should be closely monitored during treatment with VYONDYS 53.

NONCLINICAL TOXICOLOGY: Carcinogenesis, Mutagenesis, Impairment of Fertility: Carcinogenesis: Carcinogenicity studies have not been conducted with golodirsen.

Mutagenesis: Golodirsen was negative in *in vitro* (bacterial reverse mutation and chromosomal aberration in CHO cells) and *in vivo* (mouse bone marrow micronucleus) assays.

Impairment of Fertility: Fertility studies in animals were not conducted with golodirsen. No effects of golodirsen on the male reproductive system were observed following weekly subcutaneous administration (0, 120, 300, or 600 mg/kg to male mice or weekly intravenous administration (0, 80, 200, or 400 mg/kg) to male monkeys. Plasma exposure (AUC) at the highest doses tested in mouse and monkey are approximately 10 and 45 times that in humans at the recommended weekly intravenous dose of 30 mg/kg.

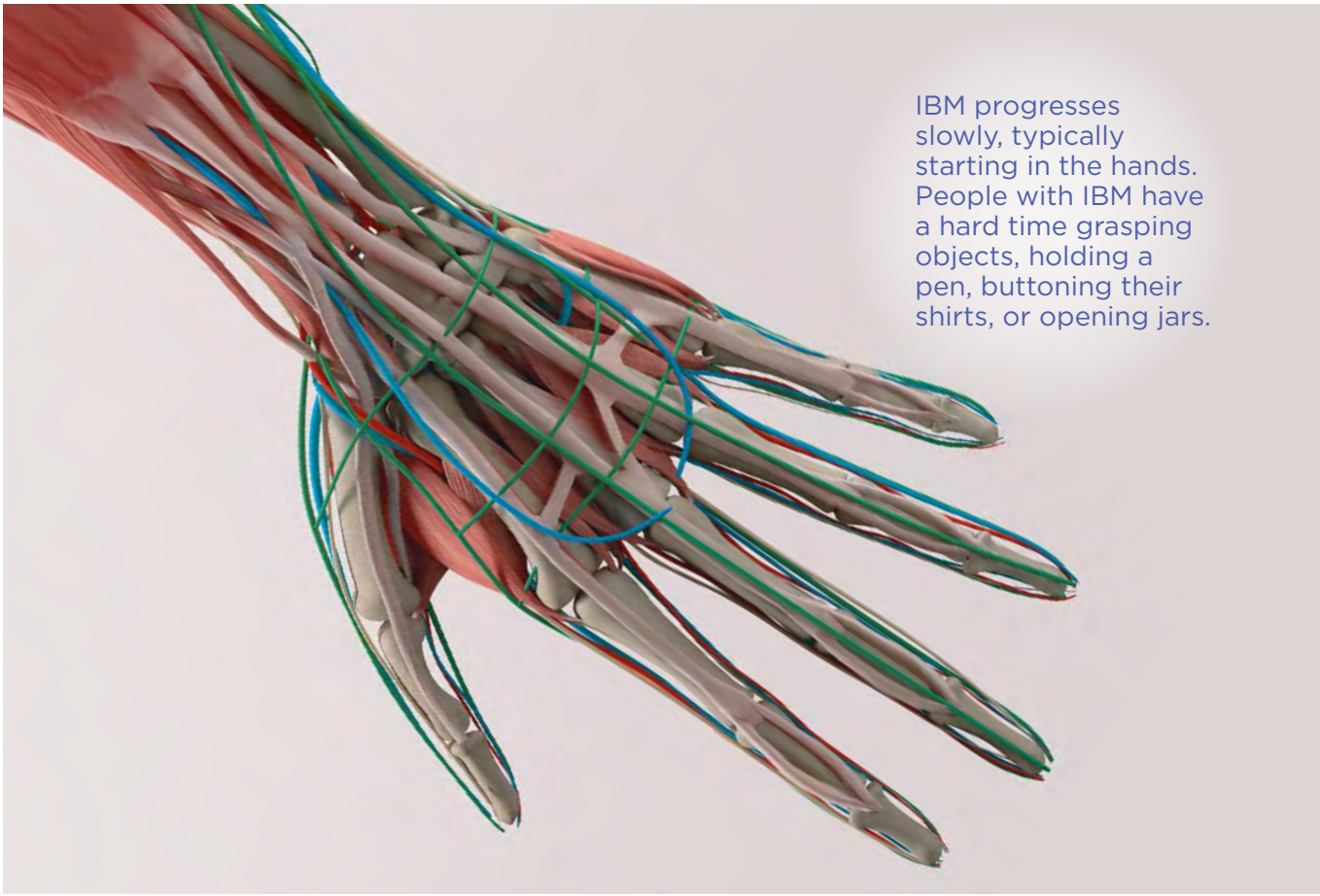
How Supplied: VYONDYS 53 is supplied in single dose vials containing 100 mg/2 mL (50 mg/mL)

Manufactured for: Sarepta Therapeutics, Inc., Cambridge, MA 02142 USA

C-SRP-53-US-0053

The Search for Inclusion-Body Myositis Treatment

A Q&A with Anthony A. Amato, MD



IBM progresses slowly, typically starting in the hands. People with IBM have a hard time grasping objects, holding a pen, buttoning their shirts, or opening jars.

Inclusion-body myositis (IBM) is one of the most common disabling inflammatory myopathies in older adults, but its underlying cause is poorly understood.

IBM is characterized by progressive muscle weakness and wasting. In patients with the disease, inflammatory cells invade muscle tissue and collect between the muscle fibers. Muscle biopsies of patients diagnosed with IBM reveal multiple "inclusion bodies" containing cellular material of dead tissue.

To learn more about IBM, we spoke with neurologist Anthony A. Amato, MD, who has headed the MDA Care Center at Brigham and Women's Hospital in Boston since 1999. Dr. Amato is considered one of the nation's top experts on IBM and other inflammatory myopathies.

What exactly is IBM, and how common is it?

IBM is probably the most common inflammatory muscle disease in people older than 50, if you don't include sarcopenia, which is age-related. IBM is frequently under-diagnosed, but its prevalence is between 5 and 10 per 100,000 — and it's a little more common in men than in women. We don't know of any ethnic or environmental risk factors, though there is an association with some other auto-immune diseases such as sarcoidosis and Sjøgren's syndrome.

Image: iStock.com/ChrisChrisW

> IBM is frequently under-diagnosed, but its prevalence is between 5 and 10 per 100,000 — and it's a little more common in men than in women.

What's the prognosis for people with IBM?

IBM progresses slowly, typically starting in the hands, but there can be variations. For most people, initial symptoms are difficulty climbing stairs, getting out of a chair, and walking long distances — activities that all rely on the quadriceps. People also have a hard time grasping objects, holding a pen, buttoning their shirts, or opening jars. These are early signs of IBM, which is different than what you might find in other types of myositis. In the other types, lifting the arms over the head is affected, while in IBM, it's the fingers that are affected. It's also more asymmetric, affecting patients more in one arm or leg than the other.

In most cases, symptoms start after the age of 60, but some patients may start in their 40s, and I've seen it even in the late 30s in patients with HIV. But it's a debilitating, progressive disease, so within 10 or 15 years, patients may be in a wheelchair. About 60% of patients also develop swallowing problems, and some need a feeding tube.

How did you become so involved with this disease?

IBM is a huge part of what I see at our Care Center. It's a big clinic, and we may see 25 patients a week with IBM; I have 50 or more whom I actively follow. Back in 1991, I did my fellowship with Jerry Mendell, MD [currently a neurologist at Nationwide Children's Hospital in Columbus, Ohio], and he had a very strong interest in IBM. I was there at the time he published his landmark paper demonstrating the presence of amyloid deposits in the muscle fibers of patients with IBM. That sparked my interest.

Are there any effective treatments for IBM?

Not at this time. I generally refer patients for physical and occupational therapy and, if they have swallowing problems, speech therapy. Patients have tried various immunotherapies, prednisone, methotrexate, and intravenous gamma globulin, but these all have side effects, and in randomized trials, they haven't been shown to be effective.

+ADVANCING RESEARCH

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What about clinical trials?

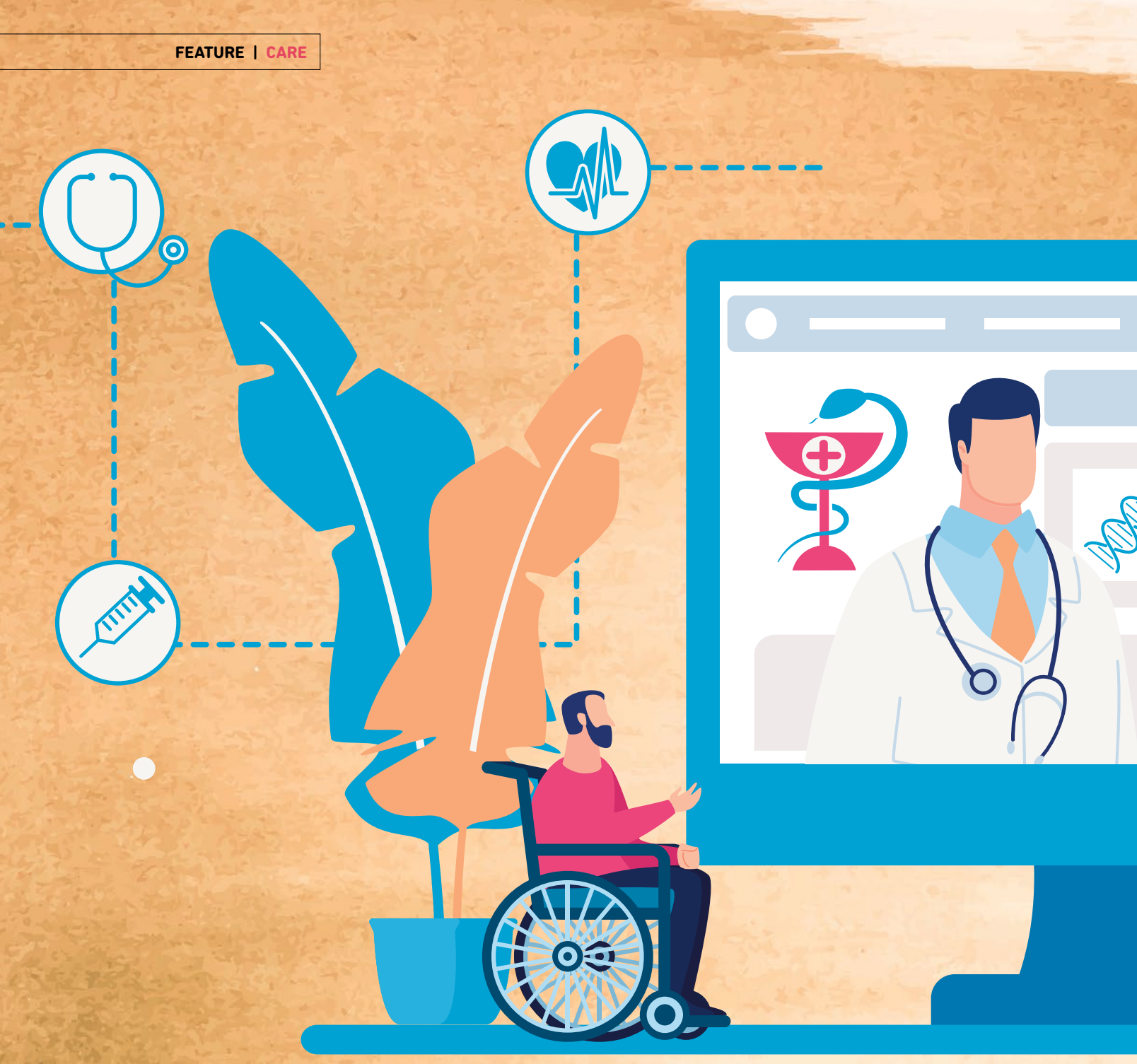
Right now, Orphazyme is doing a trial of arimoclomol involving 100 patients in the United States and 50 in England. The hypothesis is that it increases heat-shock protein production in the muscle, reducing the formation of inclusions. Most of the patients in this 20-month study will finish in the next six months, and we look forward to seeing the results.

There are also efforts to develop antibodies that target some of the specific inflammatory cells seen in the bloodstream and muscle of people with IBM. That holds a lot of promise.

What can people with IBM do today to help advance research?

There are research studies underway that involve donating blood and muscle tissue. If IBM patients are going to have a diagnostic muscle biopsy, they can elect to donate the leftover tissue to research.

They can also volunteer for clinical trials. We don't have a difficult time recruiting patients; they really want to participate in these studies because options for treating IBM are limited. Q



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Future

MDA Care Centers innovate to bring healthcare into the home

BY MYRNA TRAYLOR

As the novel coronavirus pandemic has called for vigilance in health safety measures such as social distancing — especially for people with neuromuscular disease who are at higher risk for severe illness related to COVID-19 — many of us have had to rethink how we do what we need to do. We've adjusted how we see our families and friends, how we get food and medicine, and how we continue care with therapists and physicians who, themselves, may work in high-risk locations.

HOW MDA CARE CENTERS KEEP CARING

Healthcare organizations across the globe have been affected by the novel coronavirus pandemic. The institutions in which MDA Care Centers operate are no exception.

MDA Care Centers offer care for individuals living with muscular dystrophy, ALS, and other neuromuscular diseases at more than 150 of the top healthcare institutions across the United States. In response to COVID-19, we quickly adjusted our policies to allow MDA funds to be applied to expand and increase the use of telemedicine in Care Centers. We also helped clinicians share telemedicine best practices, coordinated with clinical leaders to develop and distribute care guidelines for individuals living with neuromuscular disease during the pandemic, and engaged with the US Food and Drug Administration (FDA) on the impact of COVID-19 on clinical trials.

Throughout the pandemic, MDA has maintained funding across the MDA Care Center network. We have prioritized this funding because we know that the Care Center network is essential for tens of thousands of individuals living with neuromuscular diseases to access expert medical care — and there has never been a time that access to expert care has been more important.

+FIND AN MDA CARE CENTER

Go to **mda.org** and type your state or ZIP code in the "Find MDA in Your Community" box. You can also contact the MDA Resource Center at **833-ASK-MDA1** or **resourcecenter@mdausa.org**.

MDA Care Centers around the country pivoted swiftly this year to help individuals and families safely maintain their health and their connection with their care teams. And the innovative ways Care Center providers are bringing care into the home may even offer a glimpse at the future of healthcare.

The growth of telemedicine

Telemedicine was used for a small percentage of medical visits before the novel coronavirus outbreak, but widespread use was limited by state and federal rules, including aspects of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which protects patient privacy, and a restriction from the Centers for Medicare & Medicaid Services (CMS) and other insurers limiting reimbursement to practitioners for this type of visit. In 2020, providers pushed for those restrictions to be loosened, and government responded.

Freer to practice virtually, healthcare providers were able to offer online visits to patients for a wide variety of services.

This was a great development for many people living with neuromuscular disease, especially those who have to travel long distances to see their specialists and whose mobility challenges can make such visits a hassle. "Many of our patients have said they want to continue telemedicine visits after the pandemic to avoid the stresses involved with coming into clinic," says Catherine Lomen-Hoerth, MD, PhD, a neurologist at the MDA Care Center at the University of San Francisco.

+PROTECTING PRIVACY

While HIPAA requirements are relaxed, protecting personal health information is still important. Providers using telemedicine have achieved HIPAA compliance by using teleconferencing features that allow them to control when patients are admitted to virtual exam rooms and restrict them from accessing other virtual rooms. Support staff contact patients to make sure they have the correct link for their visit and troubleshoot any problems with logging on.

From the comfort of their homes, individuals can use any device with a camera and cell service or internet access for a telemedicine visit. Different providers and institutions have set up different methods of connecting over videoconferencing platforms, such as Zoom. Generally, the patient follows a link that allows them to sign into a virtual exam room. That virtual exam room can only be accessed by the patient and the provider or providers who are part of the visit. For a multidisciplinary care visit, the patient stays in their virtual room, and the various providers circulate through, just as they would in an in-person clinic visit.

Home sweet health center

Healthcare providers of all types are using telehealth in creative ways to help their patients maintain their health

Image: iStock.com/Tera Vector

regimens while minimizing in-person visits. In some cases, working with people in their home environments even offers advantages.

Matthew J. Caraher, PT, DPT, is program director for the PT Neurologic Residency Program and lead physical therapist in the Neuromuscular Division in the departments of Physical Therapy and Neurology at the University of Miami Miller School of Medicine. When in-person physical therapy sessions aren't advisable, he and his colleagues find creative workarounds to keep their patients moving.

"I've had multiple sessions with patients and family members to teach stretching and exercise examples," he says. "I usually will demonstrate techniques myself or share my screen on Zoom to give a more complete picture of how to perform the exercise."

+TELEMEDICINE OR TELEHEATH?

According to the Telehealth Research Incubator at the University of Michigan, "telemedicine" describes the use of technology, such as a phone, tablet, or computer, to conduct a billable clinical service. (These are also called televisits, e-visits, or virtual visits.) Sometimes the term "telehealth" is used interchangeably with telemedicine, but experts use it to describe broader healthcare activities, including education, done via technology.

> "Many of our patients have said they want to continue telemedicine visits after the pandemic to avoid the stresses involved with coming into clinic.
>
> —Catherine Lomen-Hoerth, MD, PhD,

> I've noticed an increase in confidence and independence in many patients.
>
> —Matthew J. Caraher, PT, DPT

Many providers note that seeing a person in their home environment can give them additional insights that inform their care recommendations. Darin Spurlock, RDN/LDN, a dietitian at the ALS Center of Excellence at the University of Miami, says that people tend to recall their food choices and eating habits better when reporting from home. In addition, "with telemedicine, we get to see how the environment may help or hinder the patient in maintaining weight," he says.

Matthew, the physical therapist, asks clients to show him particular spots or tasks in the home that give them trouble and offers problem-solving strategies.

Matthew also has noticed an unexpected benefit when people with neuromuscular diseases maintain their own health regimens. "It has become empowering to put the responsibility of care on the patient," he says. "When we're not physically there to assist, they realize the importance of the programs that we design to be performed outside of our sessions. I've noticed an increase in confidence and independence in many patients."

Some drawbacks

While virtual visits are working well for established patients, most providers prefer to see new patients in person to make initial assessments and order tests that will help determine a diagnosis. In addition, there

currently is no way to perform respiratory assessments via video.

Individuals and their care providers have to weigh the risk of COVID-19 exposure against any delay in diagnosis or the implementation of a treatment plan.

"I think the biggest issue in delaying any diagnosis is that it delays the time it takes to get the actual directed treatment for that condition," says Jinsy Andrews, MD, director of neuromuscular clinical trials at Columbia University. "From the patient and caregiver perspective, you know they're looking for answers. The downside of not getting the diagnostic confirmation is that they live in this world of uncertainty for a longer period of time, and that has intangible effects on the family and the person living with the disease."

Fortunately, genetic testing labs are also recognizing the need to work with people in their homes. After assessing a patient, a provider may be able to have a genetic testing kit sent to their home with instructions on how to collect the sample (often a cheek swab) and mail it back to the lab. While genetic test results must be communicated by a physician or genetic counselor, often that can be done via telemedicine.

A way forward

Although there are certain things that cannot be accomplished without an in-person visit, the dedicated providers who are currently delivering care by any means available to people living with neuromuscular disease believe that telemedicine offers great advantages, and they would like to see it continue once the pandemic is past.

"I'm very hopeful that this experience will cause permanent changes," Dr. Lomen-Hoerth says. "I'm glad that MDA and their advocacy group are advocating on behalf of patients and providers so that these guidelines can continue." Q

Myrna Traylor is a writer and editor for *Quest*.

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A CLINICAL STUDY IN MYASTHENIA GRAVIS

ALEXION

Alexion is currently recruiting patients with anti-acetylcholine antibody receptor positive generalized myasthenia gravis (MG) 18 years of age or older for a Phase 3 study of ravulizumab-cwvz, called the CHAMPION MG Study. The study will assess ravulizumab-cwvz, compared to placebo, on the improvement of MG symptoms (MG activities of daily living). Participants may continue on their current medicines*, as long as they are stable, and after a 26-week study treatment period all participants can receive ravulizumab-cwvz for an additional follow up period of up to 2 years. For more information and to learn if you are eligible for the CHAMPION MG Study, please contact **ClinicalTrials@alexion.com** or go to **MGCHAMPION.com.**

*Except for other complement inhibitors, rituximab, chronic Plasma Exchange or Intravenous Immunoglobulin

Students and educators share their experiences with online learning

BY KAREN DOSS BOWMAN

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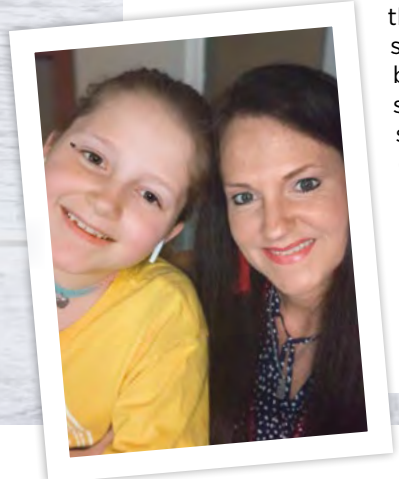
From a distance

When Faith Fortenberry's elementary school closed in March because of the novel coronavirus pandemic, she missed seeing her friends and teachers every day. An outgoing 9-year-old living with spinal muscular atrophy (SMA), Faith thrives on social interaction. Even so, she found that online learning offered some advantages.

Faith, who lives in Woodway, Texas, often needs more time to complete schoolwork because weakened muscles in her hands and wrists make it difficult for her to hold a pencil. After her school switched to virtual learning, Faith — a third-grader at the time — began using her iPad's speech-to-text function for writing assignments. For math problems, she could tap a number pad on the screen with one finger. This



< Faith and Leeann Fortenberry

HOW IEPs AND 504 PLANS ARE AFFECTED

School closings amid the novel coronavirus pandemic in the spring affected 7.5 million special education students in the United States.

According to guidance from the US Department of Education (DOE) released in March, school systems are not required to provide services to students with disabilities if the general student population also is not receiving educational services. If the general population is provided with learning opportunities, students with special needs must be offered equitable access.

The DOE recommendation states that, "to the greatest extent possible, each student with a disability should be provided the special education and related services identified in the IEP or 504."

The services students receive may look different now, possibly provided through virtual or online channels or in the student's home.

"Whatever accommodations were already in place, they should be continued while students are at home," says Sally Dunaway Young, PT, DPT, a physical therapist and clinical research manager with the Stanford University Neuromuscular Disorders Program. "Even though everyone is trying to be as flexible as possible, these services shouldn't go out the window just because students are not in the school anymore."

Sally Dunaway Young, PT, DPT

It's critical for parents and caregivers to partner with their children's special education team to ensure that students continue learning and developing while school buildings are closed. Cindy Hiestand, an elementary school speech therapist in Ringgold, Ga., has continued providing services for her students through FaceTime or other online platforms.

"The most important thing is having good communication with parents," Cindy says. "Like me, the physical therapists and occupational therapists have been making videos and sending those to their kids, so parents can help their children. It's really about good parent participation."

5 TIPS FOR KEEPING VIRTUAL LEARNING ON TRACK

Living with a neuromuscular disease comes with a host of challenges, and it might feel daunting to add virtual classwork to the mix. These tips can improve the online learning experience.

1 Stick to a schedule. Leeann Fortenberry, a second-grade teacher, developed a daily schedule that incorporated everything from instructional time with her own students and her daughter Faith's schoolwork to exercises, free time, and outings. "We made a list of everything that was important to get done each day and prioritized it," Leeann says.

2 Be flexible. While keeping a routine is important, it's also wise to be nimble. Things may not go as planned, and technology may fail. "Teachers have different technical levels, and family members also might not be able to help with the technology side," says Justin Moy, a college junior studying bioinformatics and computational biology. "I believe in self-advocating, but also take into account the situations that teachers and caregivers are facing."

Cindy and Will Hiestand

3 Take breaks throughout the day. One of the perks of virtual education is the ability to self-pace. Will Hiestand, 14, lives with Charcot-Marie-Tooth disease (CMT), like his mom, Cindy. When his high school went online, he found he was doing more typing than usual, which tired his hands, causing his fingers to go to limp. Cindy often had to persuade him to take a break. "As much as I hated it, taking breaks helped," Will says. "It was nice to get on my bed, take my mind off the work for a little bit, and let my hands reset."

4 Continue physical and occupational therapy. If you can't see physical, occupational, or speech therapists in person, you may be able to continue appointments through telehealth. "A therapist can support a patient who is struggling during this time and help build up confidence that they can do exercises on their own, even if they don't have skilled hands touching them on a regular basis," says Sally Dunaway Young, PT, DPT, a physical therapist and clinical research manager with the Stanford University Neuromuscular Disorders Program.

5 Stay connected with friends and family. Online education can be isolating. For most students, missing out on daily interactions with friends and classmates has been the most challenging aspect of learning from home. Stay engaged with friends and family, and continue extracurricular or community activities whenever possible.

approach allowed her to work faster with less muscle fatigue.

"In some ways, she felt more successful because she could tackle things faster than having to write by hand," says her mom, Leeann Fortenberry, a second-grade teacher.

Though Faith's Individualized Education Program (IEP) allows her to use speech-to-text software rather than handwriting, Leeann hadn't pushed for that option before. "We didn't realize what a beneficial thing it was," she says. Now, speech-to-text is a permanent part of Faith's academic toolbox, whether she's learning remotely or not.

Adjusting to virtual education

Faith was one of an estimated 55.1 million US students whose 2019-2020 school year was affected by the pandemic. This fall, Faith joined her fourth-grade classmates in person, but many children with neuromuscular diseases are continuing with full-time virtual learning or participating in a hybrid model that involves a mix of in-person and online instruction.

Many students — and school staff — with neuromuscular disease have found that the flexibility of online learning creates a more relaxed schedule. Cindy Hiestand, an elementary school speech therapist in Ringgold, Ga., who lives with Charcot-Marie-Tooth disease (CMT), missed her students but enjoyed the change of pace.

"I love not having to get all fancy for the day," Cindy says. "Being in the comfort of my house and working with students by video is much less effort on my muscles."

Taking away the stress of getting from one place to the next is especially helpful for college students, who often have to trek across expansive campuses for classes, meals, and extracurricular activities. Justin Moy, a junior at Worchester Polytechnic Institute in Massachusetts, estimates that he saved at least an hour each day after his classes moved online.

"Before COVID-19, just getting across

+MORE ONLINE

Watch Justin Moy and Chris Rosa, PhD, discuss facing back-to-school season while living with neuromuscular disease in the midst of the COVID-19 pandemic. The recorded Facebook Live event is on **youtube.com**. Search for "MDA Frontline COVID-19 Response Back to School."

Justin Moy

campus took up a significant amount of time," says Justin, who lives with congenital muscular dystrophy (CMD) and uses a power wheelchair. "I was able to use that time to get other things done, which was a boost to my productivity."

The downsides of online learning

Students across the country are missing in-person interaction with peers and teachers as they continue to do their schoolwork from home. That lack of social stimulation combined with less movement throughout the day can have a negative impact on learning, particularly for students with neuromuscular disease.

"When your senses are fully engaged, with your body and mind active, you're more alert and have more energy," says Donnielle Rome-Martin, OTR/L, ATR, an occupational therapist and registered art therapist at Columbia University Medical Center Pediatric SMA Clinical Research Center and MDA Care Center. "When children are spending entire days in one position with less interactions, overall they may not be getting as cognitively stimulated."

Donnielle recommends that parents and caregivers give kids learning at home opportunities for multiple positional changes throughout the day. That could be changing the tilt of their wheelchair, weight shifting, rolling to the side, ankle pumps with the feet, standing up for a few moments, or taking short sensory breaks. Donnielle recommends setting an alarm for every 20 minutes as a reminder.

"Any form of movement you may be able to engage in and incorporate throughout your day would be beneficial to lessen the impact of muscle deconditioning and help boost your learning experience," Donnielle says.

Donnielle Rome-Martin, OTR/L, ATR

Karen Doss Bowman is a freelance writer and editor living with progressive muscular atrophy, a subset of ALS, in Bridgewater, Va.

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Evrysdi is a prescription medicine used to treat spinal muscular atrophy (SMA) in adults and children 2 months of age and older.

It is not known if Evrysdi is safe and effective in children under 2 months of age.

Important Safety Information

- Before taking Evrysdi, tell your healthcare provider about all of your medical conditions, including if you:
  - have liver problems
  - are pregnant or plan to become pregnant. If you are pregnant, or are planning to become pregnant, ask your healthcare provider for advice before taking this medicine. Evrysdi may harm your unborn baby.
  - are a woman who can become pregnant:
    - Before you start your treatment with Evrysdi, your healthcare provider may test you for pregnancy. Because Evrysdi may harm your unborn baby, your healthcare provider will decide if taking Evrysdi is right for you during this time
    - Talk to your healthcare provider about birth control methods that may be right for you. Use birth control while on treatment and for at least 1 month after stopping Evrysdi
  - are an adult male planning to have children: Evrysdi may affect a man's ability to have children (fertility). If this is of concern to you, make sure to ask a healthcare provider for advice
  - are breastfeeding or plan to breastfeed. It is not known if Evrysdi passes into breast milk and may harm your baby. If you plan to breastfeed, discuss with your healthcare provider about the best way to feed your baby while on treatment with Evrysdi
- **Tell your healthcare provider about all the medicines you take,** including prescription and over-the-counter medicines, vitamins, and herbal supplements. Keep a list of them to show your healthcare provider and pharmacist when you get a new medicine
- You should receive Evrysdi from the pharmacy as a liquid that can be given by mouth or through a feeding tube. The liquid solution is prepared by your pharmacist. If the medicine in the bottle is a powder, **do not use it.** Contact your pharmacist for a replacement
- Avoid getting Evrysdi on your skin or in your eyes. If Evrysdi gets on your skin, wash the area with soap and water. If Evrysdi gets in your eyes, rinse your eyes with water
- The most common side effects of Evrysdi include:
  - For later-onset SMA: fever, diarrhea, rash
  - For infantile-onset SMA: fever, diarrhea, rash, runny nose, sneezing, sore throat, and cough (upper respiratory infection), lung infection, constipation, vomiting

These are not all of the possible side effects of Evrysdi. For more information on the risk and benefits profile of Evrysdi, ask your healthcare provider or pharmacist.

You may report side effects to the FDA at **1-800-FDA-1088** or **www.fda.gov/medwatch**. You may also report side effects to Genentech at **1-888-835-2555**.

Please see accompanying brief summary for additional Important Safety Information.

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What is EVRYSDI?

- EVRYSDI is a prescription medicine used to treat spinal muscular atrophy (SMA) in adults and children 2 months of age and older.
- It is not known if EVRYSDI is safe and effective in children under 2 months of age.

Before taking EVRYSDI, tell your healthcare provider about all of your medical conditions, including if you:

- have liver problems.
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- are a woman who can become pregnant:
  - Before you start your treatment with EVRYSDI, your healthcare provider may test you for pregnancy. Because EVRYSDI may harm your unborn baby, you and your healthcare provider will decide if taking EVRYSDI is right for you during this time.
  - Talk to your healthcare provider about birth control methods that may be right for you. Use birth control while on treatment and for at least 1 month after stopping EVRYSDI.
- are an adult male planning to have children: EVRYSDI may affect a man's ability to have children (fertility). If this is of concern to you, make sure to ask a healthcare provider for advice.
- are breastfeeding or plan to breastfeed. It is not known if EVRYSDI passes into breast milk and may harm your baby. If you plan to breastfeed, discuss with your healthcare provider about the best way to feed your baby while on treatment with EVRYSDI.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. Keep a list of them to show your healthcare provider and pharmacist when you get a new medicine.

How should I take EVRYSDI?

See the detailed Instructions for Use that comes with EVRYSDI for information on how to take or give EVRYSDI oral solution.

- You should receive EVRYSDI from the pharmacy as a liquid that can be given by mouth or through a feeding tube. The liquid solution is prepared by your pharmacist. If the medicine in the bottle is a powder, **do not use it**. Contact your pharmacist for a replacement.
- Avoid getting EVRYSDI on your skin or in your eyes. If EVRYSDI gets on your skin, wash the area with soap and water. If EVRYSDI gets in your eyes, rinse your eyes with water.

Taking EVRYSDI

- Your healthcare provider will tell you how long you or your child needs to take EVRYSDI. Do not stop treatment with EVRYSDI unless your healthcare provider tells you to.
- For infants and children, your healthcare provider will determine the daily dose of EVRYSDI needed based on your child's age and weight. For adults, take 5 mg of EVRYSDI daily.
  - Take EVRYSDI exactly as your healthcare provider tells you to take it. Do not change the dose without talking to your healthcare provider.
- Take EVRYSDI 1 time daily after a meal (or after breastfeeding for a child) at approximately the same time each day. Drink water afterwards to make sure EVRYSDI has been completely swallowed.
- Do not mix EVRYSDI with formula or milk.
- If you are unable to swallow and have a nasogastric or gastrostomy tube, EVRYSDI can be given through the tube.
- If you miss a dose of EVRYSDI:
  - If you remember the missed dose within 6 hours of when you normally take EVRYSDI, then take or give the dose. Continue taking EVRYSDI at your usual time the next day.
  - If you remember the missed dose more than 6 hours after you normally take EVRYSDI, skip the missed dose. Take your next dose at your usual time the next day.
- If you do not fully swallow the dose, or you vomit after taking a dose, **do not take** another dose of EVRYSDI to make up for that dose. Wait until the next day to take the next dose at your usual time.

Reusable Oral Syringes

- Your pharmacist will provide you with the reusable oral syringes that are needed for taking your medicine and explain how to use them. Wash the syringes per instructions after use. Do not throw them away.
- Use the reusable oral syringes provided by your pharmacist (you should receive 2 identical oral syringes) to measure your or your child's dose of EVRYSDI, as they are designed to protect the medicine from light. Contact your healthcare provider or pharmacist if your oral syringes are lost or damaged.
- Once transferred from the bottle to the oral syringe, take EVRYSDI right away. Do not store the EVRYSDI solution in the syringe. If EVRYSDI is not taken within 5 minutes of when it is drawn up, EVRYSDI should be thrown away from the reusable oral syringe, and a new dose should be prepared.

What are the possible side effects of EVRYSDI?
The most common side effects of EVRYSDI include:

- **For later-onset SMA:**
  - fever
  - diarrhea
  - rash
- **For infantile-onset SMA:**
  - fever
  - runny nose, sneezing, sore throat, and cough (upper respiratory infection)
  - constipation
  - diarrhea
  - lung infection
  - vomiting
  - rash

These are not all of the possible side effects of EVRYSDI. For more information, ask your healthcare provider or pharmacist.

Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

How should I store EVRYSDI?

- Store EVRYSDI in the refrigerator between 36°F to 46°F (2°C to 8°C). Do not freeze.
- Keep EVRYSDI in an upright position in the original amber bottle to protect from light.
- Throw away (discard) any unused portion of EVRYSDI 64 days after it is mixed by the pharmacist (constitution). Please see the Discard After date written on the bottle label. (See the **Instructions for Use** that comes with EVRYSDI).

Keep EVRYSDI and all medicines out of the reach of children.

General information about the safe and effective use of EVRYSDI.

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use EVRYSDI for a condition for which it was not prescribed. Do not give EVRYSDI to other people, even if they have the same symptoms you have. It may harm them. You can ask your pharmacist or healthcare provider for information about EVRYSDI that is written for health professionals.

What are the ingredients in EVRYSDI?

Active ingredient: risdiplam

Inactive ingredients: ascorbic acid, disodium edetate dihydrate, isomalt, mannitol, polyethylene glycol 6000, sodium benzoate, strawberry flavor, sucralose, and tartaric acid.

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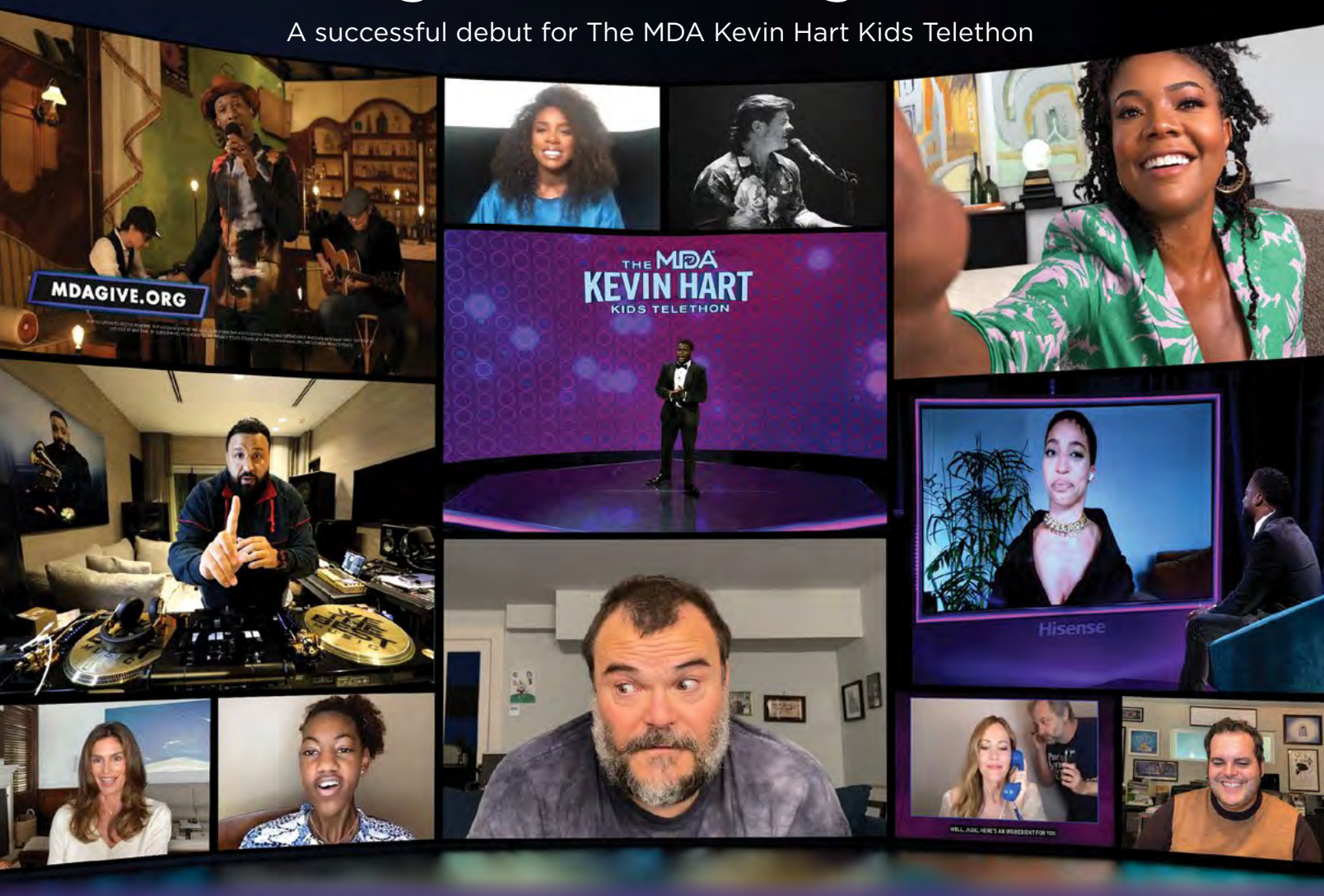
Reimagined and Moving Forward

A successful debut for The MDA Kevin Hart Kids Telethon



On Oct. 24, actor and comedian Kevin Hart, dozens of his celebrity friends, and the MDA community joined together to raise funds for research, care (including Summer Camp and educational programming), and advocacy during The MDA Kevin Hart Kids Telethon.

Top row, left to right: singer Aloe Blacc, singer Kelly Rowland, singer Robin Thicke, actress Gabrielle Union-Wade. Middle row, left to right: DJ Khaled, actor/comedian Kevin Hart, model/activist/actress Jillian Mercado with Kevin Hart. Bottom row, left to right: model Cindy Crawford, MDA advocate Maddee Helaire, actor/singer Jack Black, actress Leslie Mann and producer/director Judd Apatow, actor/singer Josh Gad.

"This was an incredible experience — bringing the work of the Muscular Dystrophy Association forward," said Kevin, who hosted the two-and-a-half-hour live event. "It's been an honor to collaborate with MDA and educate the public about supporting people with disabilities. We are all in this together."

A star-studded affair

Tuning in via LOL Network platforms and social media channels like YouTube, Facebook, and TikTok, people worldwide streamed the reimagined event for entertainment, comedy, and musical performances by celebrities including actress Gabrielle Union-Wade, model Cindy Crawford, actor Josh Gad, and DJ and record producer DJ Khaled, to name a few, alongside our MDA advocates and Care and Resource Center teams. Among the moments:

"Black Panther" star **Michael B. Jordan** highlighted MDA's vital advocacy work. "[Advocates] are using their voices to push for legislation that could change lives, including better healthcare coverage, better access to voting, and increased newborn screening. They are out there fighting," Michael said.

Fashion model, actress, and activist **Jillian Mercado,** who lives with spastic muscular dystrophy, gave her expert fashion advice to help actor and singer **Jack Black** with a wardrobe update. Jillian then joined Kevin for a live chat about her beginnings in the fashion industry. As a child, she collected fashion magazines and longed to see someone like herself on the cover. "I took it upon myself to make sure disability in the fashion industry was heard and that it would start conversations with actual changes," she said. "Now, 10 years later, I think I can say confidently that I've done a pretty good job. And, FYI, I'm not leaving."

Singer **Kelly Rowland** chatted with MDA advocate **Maddee Helaire**, 13, about Maddee's love of cooking, dancing, and her favorite MDA programs and events: galas, camps, and the Shamrocks fundraiser. As a proud supporter of Shamrocks, she gave some details on the important research and programs it supports that help people like her. "Thirteen years ago I was supposed to be in a wheelchair, and now I'm walking and doing everything," said Maddee, who has congenital muscular dystrophy. Kelly and Maddee then choreographed an end-zone dance for Maddee's brother, who plays in the NFL.

Actor **Adam Devine** sat down virtually with MDA chief medical advisor **Barry Byrne, MD, PhD**, and MDA medical consultant **Matthew B. Harms, MD**, for a segment he called "Doctors Roundtable." They discussed the doctors' essential gene therapy work and how MDA has helped unite clinicians, researchers, and the patient and family communities for these medical advancements.

"Schitt's Creek" star **Dan Levy,** whose aunt has facioscapulohumeral muscular dystrophy (FSHD), said the annual telethon was a highlight for his family while he was growing up, and he introduced a recap of special telethon moments.

Rapper **Fat Joe**, actress **Leslie Mann** (with an appearance from her husband, producer and director **Judd Apatow**, who donated $100,000), singer **Aloe Blacc**, actor **Jay Ellis**, actor **Zachary Levi**, and comedian **Loni Love** lent their help at the call center.

Additionally, MDA hosted an online auction on CharityBuzz including one-of-a kind celebrity items from **David Beckham, Serena Williams, Stephen Curry, Zachary Levi**, and more.

+MISSED THE LIVE EVENT?

You can watch the telethon on the LOL Network on YouTube and the MDA 70th Anniversary Show on MDA's Facebook page.

THE MDA KEVIN HART KIDS TELETHON

> "The money we raise tonight is going to go a long way, and we promise to keep on pushing the envelope for accessibility, independence, and equality for all people with neuromuscular disease.
>
> —Lynn O'Connor Vos

A celebration of community and hard work

Viewers also got an inside look at MDA's essential work through profiles of the people MDA's mission serves: families living with neuromuscular disease, advocates for the disability community, and researchers developing therapies. Kevin took time to recognize the impact of MDA partners such as the International Association of Fire Fighters (IAFF), Dutch Bros Coffee, Jiffy Lube, and the National Association of Letter Carriers (NALC).

Lynn O'Connor Vos, president and CEO of MDA, expressed her gratitude for the show and for the opportunity to tell incredible stories about the MDA community. "The money we raise tonight is going to go a long way, and we promise to keep on pushing the envelope for accessibility, independence, and equality for all people with neuromuscular disease," she said.

The evening wrapped up with the MDA 70th Anniversary Show, hosted by TV personalities Nancy O'Dell and Jann Carl and with appearances from more celebrity guests honoring 70 years of progress. This hour of extended programming celebrated members of the neuromuscular disease community and revisited memorable moments from past telethons.

Telethon sponsors included Salesforce, Hisense, Fabletics Men, Hydrow, Shake Shack, Sarepta Therapeutics, Jiffy Lube, Mitsubishi Tanabe Pharma America, Cytokinetics, and more. Hisense had premium H9G TV giveaways and matching gifts during the event.

A gaming element

Complementing the telethon, and building up the excitement, was the MDA Let's Play for a Cure gaming streamathon. This live-streaming event, hosted by DJ and gamer Zedd, brought the MDA community together in the weeks leading up to the telethon and during the event to enjoy giveaways, surprise guests, and video games while raising money to support MDA's mission. The community continues to game year-round. Join on Discord or at **mda.org/lets-play**.

There are many questions about ALS.

You can help find answers.

The National ALS Registry

is a program that allows people with ALS to fight back and help defeat the disease.

We are working towards a better future for people living with ALS by:

Collecting and analyzing data

Striving to better understand the disease

Helping researchers find possible risk factors

Your participation can make a difference.

Ask us about the Registry today.
For more information,
call (800) 232-4636 or visit cdc.gov/als.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
Agency for Toxic Substances and Disease Registry

Business Unusual

Can a global pandemic be a blessing in disguise? For this fashion entrepreneur, the answer is yes

BY KEISHA GREAVES

Over the summer, I wished I could go to the movies, enjoy a meal out with friends, and explore the latest fashions at my favorite malls. Instead, I didn't go any farther than the parking lot outside my apartment building.

But, honestly, I wasn't brought down by sheltering in place. I'm really a homebody, and I've worked hard to make my home my sanctuary. Also, in some ways, the COVID-19 pandemic ended up being a blessing in disguise.

A passion for fashion

I am the founder of Girls Chronically Rock (**girlschronicallyrock.com**), a clothing company I created in 2017 to help inspire and motivate others in the disability community.

I was diagnosed with limb-girdle muscular dystrophy (LGMD) in 2011, and after hearing those words, I was not sure what the future held for me, or if I was going to be able to pursue my dreams.

At the time, I was working as a merchandise coordinator for department stores such as Macy's, Target, and Nordstrom. I've always had a passion for fashion, but I was on my feet a lot, and it took a toll on my body as my LGMD progressed.

When it became harder to move freely, I asked my employer to let me work from home. I was stunned that my employer did not want to accommodate me after I had been working for them for years. Despite my drive and expertise, they made me feel like I was not good enough.

Pursuing my dreams

I am a true believer that things happen for a reason. That's why Girls Chronically Rock was born.

I knew I wanted to start my own fashion line with the word "chronic" in it, for "chronic illness." I was lying in bed one night, and I thought, "Girls chronically rock." That was it! I loved the way it sounded, and I ran with it. As I launched a collection of T-shirts with inspirational quotes, I also began speaking publicly to help others in the disability community.

Right before the pandemic, I visited my alma mater, Framingham State University, to speak to students about adaptive fashion. The audience was all smiles, and I left with a feeling of honor for serving my community and a customized, framed Girls Chronically Rock poster from the school. It was a powerful keepsake that was hanging in the very cafeteria that I used to eat in as a student — and I got to take it home and put it on my wall.

Unexpected changes

I had no way of knowing that would be my last in-person speaking engagement for a long time. The pandemic brought lots of unexpected changes. The first couple months of the shut-down impacted Girls Chronically Rock. Orders slowed. Collaborative projects dissipated. I wasn't sure what was to become of my health or the business that I had poured so much of my blood, sweat, and tears into.

I expected nothing less; the entire world was in crisis with loss of lives, loss of family members, and loss of jobs. I almost felt terrible marketing my business, asking people to spend money on my merchandise. It felt like a lose-lose situation.

Then, around the end of April, my big moment arrived. I thought, "Why not create face masks out of some of the T-shirts I have in inventory?"

> "I thought, "Why not create face masks?"

I also started a podcast to express my feelings about what's going on in the world with the COVID-19 pandemic and the Black Lives Matter movement. I created T-shirts that say "Black, Disabled Lives Matter" and other quotes related to our community and current events.

Keisha's business took off when she began making face masks out of T-shirts in her collection.

This allowed me to be in touch with the community and show support and love from inside my apartment. And customers really liked the new designs. Sales resumed, and then started to take off.

The silver lining

Since the world has gone digital, I've had more opportunities to grow and expand my brand. It can be difficult for me to get to in-person events because I use a wheelchair and don't have an accessible vehicle. Plus, in the midst of the COVID-19 pandemic, I'm at higher risk because of respiratory problems caused by my LGMD.

Coronavirus created a digital world where everyone could host video conferences and webinars. I was able to participate in many more events than I had before the pandemic began. In fact, since the quarantine began, I've spoken to the students at Partners for Youth with Disabilities and at the NORD Rare Disease and Orphan Products Breakthrough Summit, Think in Color Summit, and Fearless Women's Summit. The opportunities truly have been amazing, and I am grateful that these organizations gave me the opportunity to share my story and bring awareness about the disability community, LGMD, and my business.

For the longest time, even before the birth of Girls Chronically Rock, I fought for more accessible work opportunities for those of us with disabilities. Now, I feel like I'm winning in a battle that had felt unwinnable. Coronavirus made that possible for me — and many folks out there like me.

This is something people in the disability community have wanted for a long time — to work remotely and have accommodations when needed. There is no way the world can force people with disabilities to go back to inaccessible workplaces when we've seen that almost everything can be done from home easily.

Looking ahead

I hope to see a vaccine for COVID-19 very soon. I pray for happiness, success, comfort, and recovery for everybody affected by the pandemic.

But, even after things get back to normal, I want people to have the option to work remotely and attend an event online. I want us to have choices. I want us to be heard, accepted, and achieve anything we want.

From where I sit, coronavirus has given me the freedom to be the powerhouse I always wanted to be. Truly an unexpected blessing, indeed. Q

Keisha Greaves, 34, lives in Cambridge, Mass. She is a writer, advocate, fashion designer, and business owner. You can find her **@girlschronical1** on Twitter, **@KeishaGreaves** on Facebook, **@girlschronically_rock** on Instagram, and you can check out her clothing at **girlschronicallyrock.com**.

Walking on Air

Our photo contest winner lives life to the fullest

Congratulations to Julie MacIntyre of Millville, NJ, our Lasting Impression Photo Contest winner. Julie, 32, was three months post-heart transplant when she and her boyfriend, Barry, went parasailing during a weekend trip to Ocean City, NJ, in 2017.

"It was the first time I realized that I can do things now that I wasn't able to for a really long time," says Julie, who lives with limb-girdle muscular dystrophy (LGMD). "It was one of the best experiences I've had, even to this day."

Just months before, Julie's heart function had plummeted, and she was placed on a transplant list. Two weeks later, she got the call that would change her life: She would receive a new heart the next day.

Since the transplant, Julie's muscle strength and stamina have improved significantly, and she hasn't stopped embracing her second chance at life — from parasailing to going back to school to study medical billing to educating elementary school students about muscular dystrophy.

Julie is grateful to her heart donor and the donor's family for giving her the chance to live and spend more time with her family and friends. "I never take a minute of my life for granted," she says.

+MORE READER PHOTOS

Congratulations to the runners-up in our contest: Paul An of Ontario, Calif.; Suzanne Hirt of Pickerington, Ohio; and Jamie Russell of Lodi, Calif. See their photos at **mda.org/quest**.

Invitae is proud to partner with MDA on the Detect Muscular Dystrophy program.

The Detect Muscular Dystrophy program provides sponsored, no-charge genetic testing and counseling for individuals suspected of having a muscular dystrophy.

Talk to your clinician if you suspect your child is showing signs of muscular dystrophy. Learn more about Detect Muscular Dystrophy at **www.invitae.com/detect-muscular-dystrophy**

INVITAE | detect™ Muscular Dystrophy

CLINICAL STUDY IN AMYOTROPHIC LATERAL SCLEROSIS (ALS)

ALEXION

The CHAMPION ALS study is a clinical trial seeking to enroll people living with ALS. The purpose of the study is to assess the safety and efficacy of ravulizumab-cwvz compared to placebo in adults with ALS.

You may be eligible to participate if you have been diagnosed with ALS, are at least 18 years of age, and have had ALS symptoms for up to 3 years.

For more information about participating in the CHAMPION ALS study, visit **alschampion.com** and talk to your doctor.

This information is intended as educational information for patients. It does not replace a doctor's judgment or clinical diagnosis. The medication being studied in the CHAMPION ALS study is not FDA approved for use in ALS.

www.ALSCHAMPION.com

CHAMPION ALS-308

Source: Data on file, Alexion Pharmaceuticals, Inc. 2019

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