HEREDITARY NEUROPATHY FOUNDATION

FALL 2021

cmtupdate

CMT THRIVE!

"When I watch my dad thrive with CMT, I know I can be strong."

– Charly S

Pg. 4

Charly Slaymaker, 5 years old, is a 1st grader at Inter-American Academy in Guayaquil, Ecuador. She enjoys dancing, learning new things, drawing, and playing with her younger brother. She is pictured with her father, Austin Slaymaker, who serves as a U.S. Department of State Foreign Service Officer. Originally from Oklahoma, the Slaymaker family has lived in Washington D.C., China, and Ecuador.

Feature Article
RareBase
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HEREDITARY NEUROPATHY FOUNDATION

The Hereditary Neuropaqthy mission is to increase awareness and accurate diagnosis of Charcot-Marie-Tooth (CMT) and related inherited neuropathies, support people living with CMT and their families with critical information to improve quality of life, and fund research that will lead to treatments and cures.

www.hnf-cure.org

CMT UPDATE
FALL 2021

Allison T. Moore
Founder and CEO
Hereditary Neuropathy Foundation

This fall I am so very grateful to all of you for your participation in a very successful CMT Awareness Month in September - we all showed the world our resilience and how we THRIVE with CMT. We've recapped the month's activities in this edition, including announcing the winner of the #CMTTHRIVE Photo Contest. Thank you for helping us raise awareness and support research for treatments and cures. And what a surprising ending to the month with the Alan Jackson TODAY Show interview! If you don't know what I'm referring to, be sure to read all about it in the Community section of this newsletter.

There are so many great things happening for those of us living with CMT! In our Featured Article, we provide the details of HNF's exciting new collaboration with Rarebase, which may result in even more clinical trials for up to ten types of CMT as early as the first quarter of 2022. Rarebase uses a tech-enabled drug discovery platform to identify the most promising FDA-approved and novel drugs for each type of CMT, and then test the drug using patient-derived cellular models.

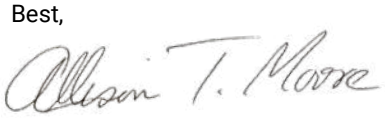
The therapy pipeline continues to expand with more and more biotech and pharma companies entering the CMT space and several of them have announced plans for clinical trial recruitment in the very near future. For example, just a little over a year ago, we told you about the recent discovery of the genetic mutation in the SORD enzyme which causes disease symptoms in CMT2 or distal hereditary motor neuropathy. In a recent CMT-Connect webinar, Shoshana Shendelman, PhD, Founder, CEO and President of Applied Therapeutics presented biomarker data from a pilot trial and announced that they will begin recruitment for a registrational trial before the end of this year! Without your participation, potential therapies will not be able to make the transition from the research lab to clinic, so please inform and prepare yourselves for participation in a clinical trial. We've included some information for you to consider on page 6.

For those with CMT1A, the PREMIER Trial – Pivotal Phase 3 Trial of Pharnext's PXT3003 has started. Please be patient while all the centers get their approvals in order to recruit patients. All of the sites and details about the trial can be found here.

HNF is powered BY patients, FOR patients. We need your support to continue providing our services and programs. There are so many ways you can help! We need sponsors for our Movement is Medicine™ platform. We need you to consider participation in the 2022 TD Bank Five Boro Bike Tour and the TCS New York City Marathon. We need you to choose HNF as your charity with amazon and eBay. And if you are living with CMT, we need your valuable input. Our Global Registry for Inherited Neuropathies (GRIN) patient registry with the newly formed "CMT Medical Journal" can enable anyone, from anywhere, to enroll in natural history studies that are a necessity in the drug discovery paradigm. Join GRIN today and then express your interest in participating in the "CMT Medical Journal" pilot study by emailing registrycoordinator@hnf-cure.org.

We need your help to raise the funding to continue to support this important research. You'll find several ideas about how you can do that in this *CMT Update*. By supporting these projects, you'll be opening the door to research for other types of CMT. Together, we will continue to THRIVE with CMT while continuing to raise awareness and advocate for treatments for all types of CMT.

Best,



Allison T. Moore

Rarebase

HNF COLLABORATES WITH RAREBASE ON A DRUG DISCOVERY PLATFORM TO DEVELOP TREATMENTS FOR CHARCOT-MARIE-TOOTH (CMT)

The Hereditary Neuropathy Foundation (HNF), in partnership with Rarebase, is leading the charge in the first-ever research initiative to tackle multiple types of CMT in one project. Rarebase is a public benefit biotech company focused on accelerating therapy development for rare diseases with its tech-enabled drug discovery platform called "Function". Rarebase will screen a compound library of thousands of FDA-approved drugs and novel drugs, targeting ten subtypes of Charcot-Marie-Tooth (CMT).

The primary goal of the collaboration is to identify the most promising drugs for each subtype of CMT and test these candidate drugs in patient-derived cellular models, specifically; Induced Pluripotent Stem Cell derived neurons (iPSC-neurons). These cell-based models will enable the collaboration to identify and characterize potential therapies more quickly and cost-effectively and reduce our dependence on research animal studies. In addition, HNF's Patient-Driven **Therapeutic Research In Accelerated Discovery (TRIAD) program** will connect Rarebase with its CMT researchers, clinicians, and other stakeholders worldwide to potentially expand the research team.

To date, there are no approved treatments for any type of CMT. Most research is slow moving, siloed and often duplicative. The technological innovation and fast-paced scientific team at Rarebase will share **preliminary results as early as the first quarter of 2022**.

"We're thrilled to be collaborating with the HNF to help find treatments for patients with CMT. There are thousands of approved drugs and many of them can have applications beyond their routinely prescribed indication. If such treatments are out there for CMT, we will find them," said Onno Faber, Co-Founder and CEO of Rarebase.

CMT is a debilitating and progressive disease impacting an estimated 150,000 people in the US and millions worldwide. Scientists have identified over 100 different gene mutations causing CMT. Currently, thousands of people with CMT are undiagnosed, yet are suffering with the symptoms of this chronic and disabling disease. CMT causes progressive nerve damage, eventually leading to muscle atrophy and loss. Over time the disease leads to feet, legs, and hands becoming deformed and difficult to use. Often those living with CMT lose the ability to walk normally and become dependent on assistive devices to remain mobile. Severe, chronic pain is common.

"Our core mission is to deliver treatments to patients with CMT. We believe the Rarebase partnership will enable FDA approved drugs for clinical use for CMT. If successful, HNF plans to expand the screens to other subtypes as funds become available," said Allison Moore, the Founder and CEO of the Hereditary Neuropathy Foundation.

FOR MORE INFORMATION: Click Here!
TO DONATE: Click Here!

About Hereditary Neuropathy Foundation (HNF)
HNF is a non-profit 501(c) 3 organization whose mission is to increase awareness and accurate diagnosis of CMT and related inherited neuropathies, support people living with CMT and their families with critical information to improve quality of life, and fund research that will lead to treatments and cures. HNF developed the Therapeutic Research in Accelerated Discovery (TRIAD) program, a collaborative effort with academia, government and industry, to develop treatments for CMT. Currently, TRIAD involves many groups that span the drug discovery, drug development and diagnostics continuum. HNF encourages patients to join the Global Registry for Inherited Neuropathies (GRIN), a patient registry that helps to advance clinical research and enables patients to be contacted to participate in research pilot studies and potential clinical trials.

About Rarebase, PBC
Rarebase is a public benefit biotech led by patients, scientists, advocates and engineers. We leverage innovative technologies to build platforms that help us discover and develop treatments for the millions of people worldwide affected by the long tail of rare genetic disorders. The company is funded by BlueYard Capital.

"CMT THRIVE" Awareness Month a Success

Thank you to you ALL for showing the world "How You THRIVE" with CMT to raise awareness of CMT this September!

The #CMTTHRIVE Photo Contest was a hit with 35 photos submitted and $3009 raised.

Our winner:

Austin and Charly Slaymaker

We want to thank all of our **THRIVERS** for their submissions and our donors for supporting HNF's vital CMT programs and research.

Our "**We Still THRIVE**" & "**See Us THRIVE" Facebook Photo Frames** were downloaded a total of 603 times! We're so grateful for all of your support and for spreading CMT Awareness this month.

A special THANK YOU to **CMT artist**, **Tovah Fine**, for creating HNF's unique Facebook "CMT, See Us THRIVE" frame!

Band Together for CMT:

SHOUT OUT

to **Julie Stone** for graciously hosting our educational and fun "**Band Together for CMT**" class! Julie demonstrated some creative ways to optimize our Therabands with lots of CMT-friendly exercises. Miss our live class? No worries! Stream it anytime and order our book & band kit here!

"I love Julie's classes! She has a magical way of providing a fun, safe and accepting environment and is thoughtful in her exercise adaptations to meet the varying ability levels of her students. Her bubbly personality is infectious and her encouragement is motivating!"

– Christy DeLozier

"Julie's band class was both educational and fun. We loved how she provided multiple adaptations so all ability levels could participate in the exercise and still be challenged."

– Alyssa Gloyd

#CMTselfcare

Thank you to all our followers who participated in our 30 days of #CMTSelfCare on social media.

Top 3 #CMTselfcare tips on Social Media

1. CMT Self Care Day #12 - Using my mobility aids
2. CMT Self Care Day #9 - Connecting to others
3. CMT Self Care Day #8 - Resting (guilt-free)

Thank you for your comments!

"Love this!! Telling doctors the truth is so important and such a vital way of looking after ourselves."

– Anonymous CMT patient

"I loved the CMTSelfCare posts because they all point out important ways in which we can manage this disease and stay uplifted! They made me feel validated and provided some wonderful tips. CMTSelfCare Day #12 pointed out something so crucial, which is that we should utilize mobility aids in order to be safe and independent! I definitely needed this reminder as I don't always use assistive devices when I should. Thank you to the HNF for these awesome posts!"

– Christina Capello

"Whether it is an active day or a restful day, I am doing the best I can for that day! The CMT self care campaign helps me to see that it is ok!"

– Stacy Soileau

CMT Awareness Month Kit

September would not be CMT Awareness Month without HNF's Survival Kit. Thank you to our CMT'ers for spreading awareness and doing your part in September 2021!

Thank you, again, to the CMT Community for making a difference. Whether you participated in the **Photo Contest**, **Band for CMT** Classes, **#CMTselfcare**, **CMT Awareness Month Kits**, or **made a monetary donation**.

Together we THRIVE!

Total Dollars Raised for Programs and Research:

$18,600

TRIAD
THERAPEUTIC RESEARCH IN ACCELERATED DISCOVERY

What you should know as we get closer to more clinical trials for CMT

This is a very exciting time for those of us living with CMT as more and more potential treatments are making their way through the pipeline and clinical trials are opening up for recruitment. If you haven't already done so, you can create a profile and complete the surveys in HNF's Global Registry for Inherited Neuropathies (GRIN) here and select that you would like to be contacted if there is a trial you may be eligible for. If you participate in a clinical trial, the information learned has the potential to help your case or to help people with the same disease or condition in the future.

What is a Clinical Trial?

Clinical trials are a type of research used to see how certain healthcare interventions affect people. This type of study could focus on medical, behavioral, or surgical types of interventions. They may be used to study new treatments to see if they're better than currently available options, as well as methods for prevention, early detection, or better quality of life for certain health conditions or diseases. Most studies are double-blinded, which means that for the entire study neither you nor the study doctors will know if you are receiving the investigational treatment or placebo.

Are They Regulated?

Clinical trials are strictly regulated by the U.S. Food and Drug Administration (FDA), and they have stringent standards that need to be followed for the trial. Trials include three phases before the FDA approves the intervention if the results of the trial were positive. Then, a fourth trial continues research to ensure the effectiveness and safety of the intervention. These regulations ensure that clinical trials are safe for participants and that the intervention is safe and worthwhile for use in humans.

Why Should I Participate in a Clinical Trial?

Clinical trials provide physicians and researchers with information about health concerns, diagnoses, and interventions. This information can be invaluable, especially in the case of health conditions or diseases without much current knowledge or effective treatment, like CMT. The information learned through the study can teach physicians and researchers about how CMT affects the body, and helps them develop or improve ways to best diagnose and manage or treat it. Participating in a clinical trial may give you a way to try a new intervention for your health condition or disease. You may have access to this intervention before it's available to the general public. If you don't gain direct benefits from the participation, at least you would provide medical information to help people in the future. This opportunity could provide a treatment option for people who otherwise had none. A clinical trial may provide you with specialized care if you participate. There is also the potential to get health check-ups and evaluations by CMT experts. It's also possible for you to receive free or low-cost medical care, travel, and related expenses as part of the trial. These aspects could benefit your own health and help you be proactive.

Things to Consider:

1. **Location:** Is the clinical trial being conducted in a location that you will be able to access for the required visits during the course of your trial? Many sponsors will offer a travel stipend, but travel can be inconvenient. Ask about the frequency of visits required.
2. **Inclusion criteria:** All clinical trials in the US are listed at https://www.clinicaltrials.gov/. There you will be able to review the criteria that you would need to meet to be eligible for the trial. Typically, inclusion criteria will require that you be of a certain age, have a formal diagnosis of the disorder being treated and meet the

requirements of the physical examination (including testing such as strength testing, blood work, urinalysis, EMG, EKG, imaging, mental health assessments, and more), and be able to give informed consent and follow the protocol.

3. **Exclusion criteria:** Clinical trials have a criteria that must be met in order to participate. You will need to consider whether or not you can make the commitment to follow the protocol for however long the clinical trial lasts. For example, a woman of childbearing age must test negative for pregnancy and use a reliable method of birth control while in the study. Additionally, you may be asked to refrain from taking a list of medications that may interfere with the study drug (i.e. marijuana, antidepressants, anti-anxiety medications, narcotics, etc.).
4. **Benefit/Risk Assessment:** There are no guarantees with a clinical trial. You may or may not actually be receiving the drug being studied, but either way you will be benefiting the research project. All clinical trials in the US are regulated by the FDA, and you will be closely monitored during the trial to avoid any unwanted outcomes. However, it is a commitment on your part so you should carefully consider exactly what is being required of you and how your life will be affected by participating in the trial. Make a list of questions to ask of the research coordinator during the pre-screening process.

IF YOU HAVE ANY QUESTIONS ABOUT CURRENT OR UPCOMING CLINICAL TRIALS, PLEASE REACH OUT BY EMAILING: registrycoordinator@hnf-cure.org

SORD Deficiency Disease State Information

Sorbitol dehydrogenase (SORD) Deficiency is a recently discovered rare, genetic metabolic disease.

People with SORD Deficiency are missing a key enzyme needed to metabolize a sugar called sorbitol.

Many people living with SORD Deficiency currently have a diagnosis of Charcot-Marie-Tooth disease (CMT2) or distal hereditary motor neuropathy (dHMN).

The recent discovery that disease symptoms in CMT2 and dHMN can be caused by genetic mutations in the SORD enzyme now gives people living with SORD Deficiency and their physicians greater understanding of their specific disease. It also provides the opportunity to participate in a clinical trial of an investigational new treatment targeting the underlying cause of SORD Deficiency.

Symptoms in those with SORD Deficiency are caused by toxic high levels of sorbitol in the body.

The human body metabolizes glucose to sorbitol, which is then further broken down to fructose, and then used for energy. In SORD Deficiency, the body is unable to metabolize sorbitol to fructose, and sorbitol accumulates. Accumulation of sorbitol is toxic to cells and tissues, resulting in significant weakness and disability. Individuals with SORD Deficiency have >100 times the sorbitol concentration in their blood compared with unaffected individuals.

Excess toxic sorbitol can lead to various symptoms, which can worsen over time.

At the time of diagnosis, the first symptom is often difficulty walking, which can range from mild to severe. Almost all people living with SORD will have muscle weakness in their legs, and the majority will have weakness in their arms. Foot deformities requiring the use of orthotics are common, as is sensory impairment. Symptoms of SORD Deficiency often start around age 17, but can happen at any time between the ages of 9 and 25.

What should I know about the SORD Deficiency trial?

Right now, there are no FDA-approved treatments for SORD Deficiency. Scientists are working to learn more about a way to potentially help. Studies have also shown that blocking the enzyme Aldose Reductase may help normalize sorbitol levels and potentially manage the symptoms of the disease.

The trial is ***INSPIRE*** – ***IN****hibiting* ***S****orbitol* ***P****roduction through* ***I****nhibition of the aldose* ***R****eductase* ***E****nzyme: A clinical program of investigational drug AT-007 in people 16 and older living with Sorbitol Dehydrogenase (SORD) Deficiency trial.*

For additional information or to inquire about participation in the clinical program of AT-007 in SORD Deficiency, please email: SORD@AppliedTherapeutics.com

APPLIED THERAPEUTICS

TRIAD
THERAPEUTIC RESEARCH IN ACCELERATED DISCOVERY

Meet Chris Gullman
Living Life with SORD Deficiency

Q. TELL US ABOUT YOURSELF:

My name is Christopher Gullmans. Well, “Christopher” is the name my Swedish-speaking Finnish parents gave me after I was adopted out of Hong Kong. So apart from looks, I’m a Finn—or at least that’s the simple answer. Currently, I’m in my mid-30s, and I work for a company that makes software and prototyping for all-weather, self-driving, last-mile vehicles.

Q. WHY DID YOU DECIDE TO SHARE YOUR STORY OF SORD DEFICIENCY?

It is an opportunity to use my experience and expertise to provide care and support to this specific group of individuals, with goals of symptom management, disease education, lifestyle enhancement, and whenever available, access to clinical research opportunities.

Q. WHEN DID YOU FIRST START EXPERIENCING SYMPTOMS? WHAT WERE THEY AND HOW DID THEY AFFECT YOUR LIFE?

My symptoms have been with me almost for as long as I can remember, to one degree or another. Before I began having real issues with mobility, I was already noticing that I felt clumsy, as if, especially, my legs didn't obey me. I had to (and still do) literally think about every step I take. This was around the age of six. As an adult, I've described this to others as "sending signals that don't match with my movements and the feedback".

But the first time people started noticing (and some making fun of) my legs or the way I walked was in high school. As CMT is so progressive, you have time to make adjustments and therefore you don't think about it too much; it becomes normal. In my case, I had already been bullied for a lot of things (like being a foreigner, having Tourette's, being socially awkward), and others making fun of my legs was just another day in school. It really wasn't until I was 24 that I began struggling, and that's also the last time I remember being able to tip-toe. This was also when I vowed to never wear shorts again.

I upped my exercise scheme and frequency, tried to take advice from people around me who pointed out that I should do this exercise or train on that gym machine. But no matter what I did, I seemed to get weaker almost by the day. It should also be noted that I lived and studied in The Netherlands at that time, and biking was my daily transport for literally everything, so it wasn't like I was being a couch potato. My knees and ankles became more and more painful with less and less strain, and also because of my past history of getting injured in sports due to weak ankles, I had to quit all forms of sports that involved leg coordination.

When I was 26, I went through mental health issues for two years. During that time, I barely left the house. One day when I was about 27 years old, I woke up to the fact that I had lost all muscle mass below the knee on my left leg, and almost all of it on my right leg. This terrified me. Little did I know that there was CMT at play here. Because of this, I made peace with the fact that I had destroyed my body for good.

Q. WHEN WERE YOU DIAGNOSED? WHAT WAS THAT EXPERIENCE LIKE? WERE YOU ORIGINALLY DIAGNOSED WITH SORD DEFICIENCY OR ANOTHER RARE OR CMT CONDITION? HOW DID THAT COME ABOUT? WHO DIAGNOSED YOU?

First of all, there are two reasons why I didn't get diagnosed with CMT sooner: shame and stubbornness. Many years went by, and I even had time to live in Brazil for three years. During these many years, I trained my brain to increase focus on my legs in an effort to increase muscle mass and abilities to even walk, as I truly believed that I had caused this through neglect.

It wasn't until I met this wonderful woman—who happens to be an orthopedic surgeon—that I got some genuinely helpful questions and concerns that there may be something underlying. As I got more comfortable with my then-girlfriend, she began noticing my legs, and although I was defensive about it at first, she convinced me it wasn't my fault, and that "you don't get muscle wasting with the sort of lifestyle you've had". That was revolutionary, because if it really was something else, then I had basically managed to do the impossible and continued leading a normal (or even beyond normal) life despite severe distal muscle atrophy.

As she is a doctor, she was my referring physician. However, the neurologist who ordered the investigations into possible neurological causes was Professor Bjarne Udd—Director of Tampere Neuromuscular Center (TNMC). This was October 2019, and by the end of 2019, after some labs had been taken and I had had an ENMG (electroneuromyography), ultrasound and MRI, two genetic conditions were suspected: SMA (spinal muscular atrophy) and CMT. But as I had survived infancy, CMT was the more likely cause. A neuromuscular disorder (gene) panel was also ordered at that time, which was sent to the lab in Tampere.

And then COVID-19 happened (and just before that, on February 29th, 2020, we got married!), and all hospital resources went into researching and battling the coronavirus. That meant that, despite our many calls to check in on the progress at the Tampere lab, little had been done. Fast forward to March 2021, I suddenly got a letter to see a neurologist in Helsinki. And there it was. Not only was CMT2 confirmed, but they had pinpointed the exact gene (mutation c.757delG [p.Ala253GlnfsTer27]) responsible for the severe muscle atrophy: SORD. What a relief it was, knowing I had had a condition all this time, and that none of my difficulties had been for lack of trying. Even more amazing was the fact that most research we could find on the Internet was from 2020 onwards, so it's entirely possible that had COVID-19 not happened and I'd been diagnosed earlier, I would have been misdiagnosed.

Q. IS ANYONE ELSE IN YOUR FAMILY AFFECTED BY CMT OR NEUROPATHY?

I have a biological sister who was adopted at the same time as me. She doesn't appear to be affected by CMT2-SORD Deficiency, as she has not suffered any catastrophic muscle loss at any point in life. In fact, she used to do track-and-field, more specifically 100m sprint, and has never had any problems that would be associated with CMT. Unfortunately,

having been orphaned, I don't know anything about my biological parents, and hence I'm unaware if one or both suffered from CMT2-SORD Deficiency. But knowing the mode of inheritance (autosomal recessive), one can only assume they were at least carriers.

Q. CAN YOU SHARE HOW SORD DEFICIENCY IMPACTS YOUR LIFE, DAILY (PHYSICAL AND/OR EMOTIONAL)?

Before I got diagnosed with SORD Deficiency, things were much more difficult. I often beat myself up about things I "could've done better", and my muscle wasting was one of them. For that reason, as earlier mentioned, there was a lot of shame, and also guilt and fear, and I stopped walking outside in shorts, no matter the weather. Fun fact: I basically never wore shorts outside during my whole time in Brazil. It was sweaty, I tell you!

However, since I got diagnosed with CMT2-SORD Deficiency, my life has been very different. Of course I still battle with the same physical difficulties, such as carrying heavy things, walking up stairs, folding laundry, and even just walking in a straight line. But, psychologically, there's been a big burden lifted off of the proverbial shoulders. The voices in my head telling me to go faster, try harder, beat myself up when I'm feeling weak, were suddenly quite questionable. For the first time in almost 10 years, I was starting to look at myself as more of a champion and less of a person who'd not been trying hard enough. In fact, I have begun realising that I've probably given far more than what could be expected of me given my disability.

This summer, I went out and bought a whole heap of shorts, and man, did I enjoy the warm summer days (and our vacation to Cyprus) this year! From having walked around in jeans in 40°C/104°F in Brazil, to suddenly walking outside with my legs in full view of everybody, was simultaneously scary and awesome.

It's not like I got comfortable walking in shorts all at once, but armed with the knowledge that I have a disability, and that others' opinions of me and my performance don't matter, made me more brave. My amazing wife has also been incredibly supportive in all this; without her encouragement, all of this would've taken longer.

Now I'm actively trying to raise awareness of CMT on my blog, in social media, and even through shirts I've designed myself (well, this is still a work in progress).

Q. HOW DO YOU REMAIN ACTIVE AND STRONG WITH SORD DEFICIENCY?

I think I'm just very fortunate to have had the life experiences I have had. Granted, a lot of them have been very traumatic, and I've had to fight to survive them, but that's also laid the foundation for my battling of my CMT and working hard to not let it bring me down. I think that when you are faced with difficulties like CMT, you have two choices: give up or give 150%. By no means is my daily life normal, even if it looks like it to most people, because in order to do the same things as others do, I have to give at least 150%. But I'm proud of the fact that my abilities to walk are essentially equivalent to the effort it takes most others to run. I no longer wish I could still run, because for me, this is, in fact, equivalent to running. Put into perspective, if I could run, I'd outrun everybody around me.

It also helps that I like biking, taking walks, and that, since my wife is a busy

For the first time in almost 10 years, I was starting to look at myself as more of a champion and less of a person who'd not been trying hard enough.

surgeon, most of the time I take care of chores at home, like groceries, cooking, cleaning and bringing out the trash—all in a building without an elevator.

Q. DO YOU THINK IT'S IMPORTANT TO KNOW WHAT TYPE OF CMT YOU HAVE? IF SO, WHY?

As CMT is so broad and there are so many causes, I do believe that it's important. Since the many forms of CMT may be caused by various genetic diseases, the way we handle them shouldn't be universal. In my case, since SORD Deficiency is not a structural issue, but rather an enzyme problem, you'd be remiss in thinking there's nothing that can be done.

Q. ARE YOU HOPEFUL FOR THE FUTURE? IF SO, WHY? WHAT ARE YOUR PLANS FOR THE FUTURE?

Because of the type of CMT I have, there's definitely hope. Whenever something is enzyme-based, there may be ways to treat it. In fact, I am currently in line for clinical trials for SORD Deficiency, courtesy of Applied Therapeutics. However, it's by no means a cure for CMT2-SORD Deficiency, and I know that I'll have to keep giving 150% for the rest of my life. That said, the fact that I've come this far and that I'm still alive and kicking, makes me hopeful that given the increased awareness of CMT, and also potential treatment, things just might be getting a little bit less of an uphill battle, and that's making a world of difference.

Nonetheless, at the end of the day, treatment or no treatment, I'll keep being me—the adventurous Chris, who's walked on the Great Wall of China (some steps are 1m/3ft tall!), scuba-dived in the Mediterranean, hit the slopes of the Pyrenees, and moved across the Atlantic by myself, all while living with CMT2-SORD Deficiency. I'd hope that nobody with CMT would ever feel like they can't make a difference in the world, because it's exactly people with unique qualities that end up making that difference.

GLOBAL REGISTRY FOR INHERITED NEUROPATHIES

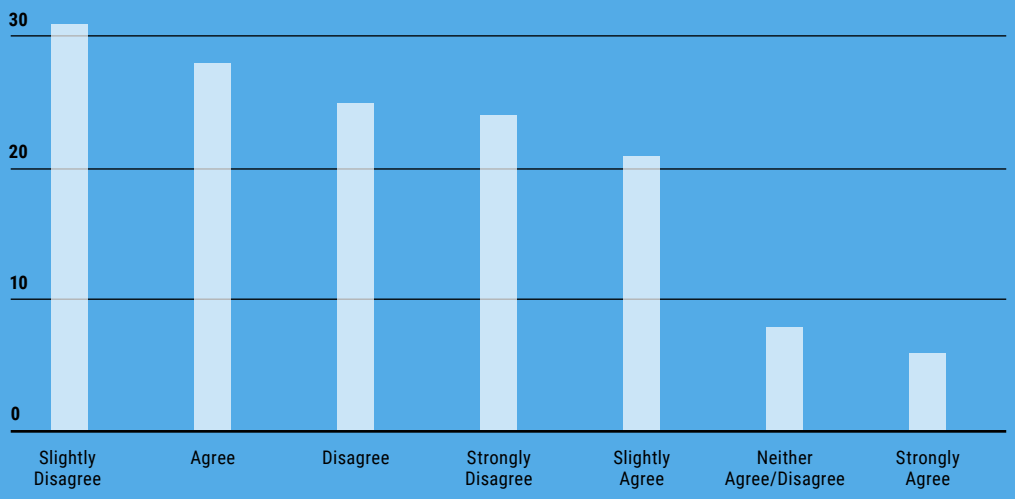
CMT & Mental Outlook

During the Movement as Medicine™ Summit in 2019, HNF collaborated with the University of Arizona and ProtoKinetics Zeno Walkway Gait Analysis System on an innovative Gait and Balance study, Patient-Reported Outcomes and mobility function in adults with Charcot-Marie-Tooth disease. In conjunction with that study, we collected data on mental health and pain via our Global Registry for Inherited Neuropathies (GRIN).

The results confirmed that while CMT can have strong feelings of detachment, isolation, and a wish for change, there was also a general sense of life satisfaction that was encouraging.

When asked "If I could live my life over, I would change almost nothing", 56% of participants strongly disagreed, disagreed or slightly disagreed with that statement.

If I could live my life over, I would change almost nothing.



It is perhaps surprising that the percentage is not higher, given that people living with CMT could snap their fingers and make their disease disappear, they probably would.

When asked to respond to the statement "I feel left out", 49% of respondents answered sometimes, with 15% answering usually or always. These answers align with feedback that we have heard from our community in focus groups and workshops over the years: the often daunting physical limitations of CMT prevent participation in a wide range of physical activities and activities of daily living (ADL) that can leave those with CMT feeling isolated and alone.

Despite the challenges that having CMT presents, 65% of respondents said that they agreed with the statement "I am satisfied with my life", with only 26% disagreeing - 9% of respondents were neutral on this statement. This speaks to people living with CMT can-do spirit that allows them to find happiness and satisfaction despite the physical limitations that their disease places on them.

HNF encourages all of its members to join our Global Registry for Inherited Neuropathies (GRIN), Inspire community and Movement is Medicine™ program to help combat those feelings of isolation and being "left out" that can often have a negative impact on mental health and well being.

Meet New Movement is Medicine™
Zumba Instructor & Ambassador, Katie Griffin

Hi, I'm Katie! I'm a wheelchair user and licensed Zumba instructor. I love music and dance so becoming a Zumba instructor was a wonderful opportunity. I teach adaptive Zumba with a focus on upper body movements. This class is great for cardio health, muscular strengthening/endurance, and most importantly having fun! I became an instructor so that I could make Zumba more readily accessible and it's something I'm really passionate about.

HNF Teams up with AdventHeath
for Movement is Medicine™ Video Series

Allyson Spivey, PT, DPT
Board Certified Clinical Specialist in Neurologic Physical Therapy

HNF is proud to expand our Movement is Medicine™ virtual platform with partner AdventHealth for a new collaborative video series. Classes will highlight adaptive exercises that address common CMT-related impairments.

Exercise has been shown to improve quality of life and function for individuals with Charcot-Marie-Tooth Disease when appropriately prescribed. Physical therapists focus on strengthening muscles not heavily affected by CMT, balance and fall prevention, flexibility, and aerobic conditioning. Research has shown that initiating an exercise program early in the disease process may slow the progression and help to maintain function. In addition, mixed programs addressing multiple impairments are superior to focusing on one single mode of exercise.

Remember, exercise should be fun and something you enjoy doing! For an individualized program, please consult your local physical therapist with experience treating neuromuscular conditions.

TO VIEW OUR CLASS CALENDAR AND GROWING VIDEO LIBRARY: click here!

AdventHealth

Happy 1st Anniversary CMT&Me App
Now available in Spanish

A year ago, the Charcot-Marie-Tooth community was introduced to the digital CMT&Me study. Currently, there are 447 participants in the US, and 1,400 worldwide. This first anniversary is an important milestone and we want to take this opportunity to thank every single one of you for joining the study and helping research. By the way, the CMT&Me app is available today in both English and Spanish to ensure that as many people as possible who are affected by CMT can participate. Let everyone around you know about it!

Studies like CMT&Me play a key role in making CMT better known to a larger audience as it brings to life a global picture of what it's like living with the condition. By participating in the study, you are helping raise awareness and defining how it impacts your daily life - from work to well-being and your morale.

This initiative comes along with several other important annual events such as the CMT Awareness Month, which occurs every September in the US, and is currently ongoing in Europe. Both aims are to run a large awareness campaign and make Charcot-Marie-Tooth a better-known condition.

Team CMT Events

2021

TD Bank Five Boro Bike Tour

Thank you to our participants for representing Team CMT. Although the tour was postponed a week due to hurricane Henry, the team still rallied and raised over

$11,600

TCS New York City Marathon

Six runners represented Team CMT on November 7, 2021. We would like to thank them for their dedication to training and raising funds for HNF's programs and vital research. Please consider donating to show your appreciation for their commitment to the CMT community.

TO DONATE Click Here!

Total Raised **$27,000**

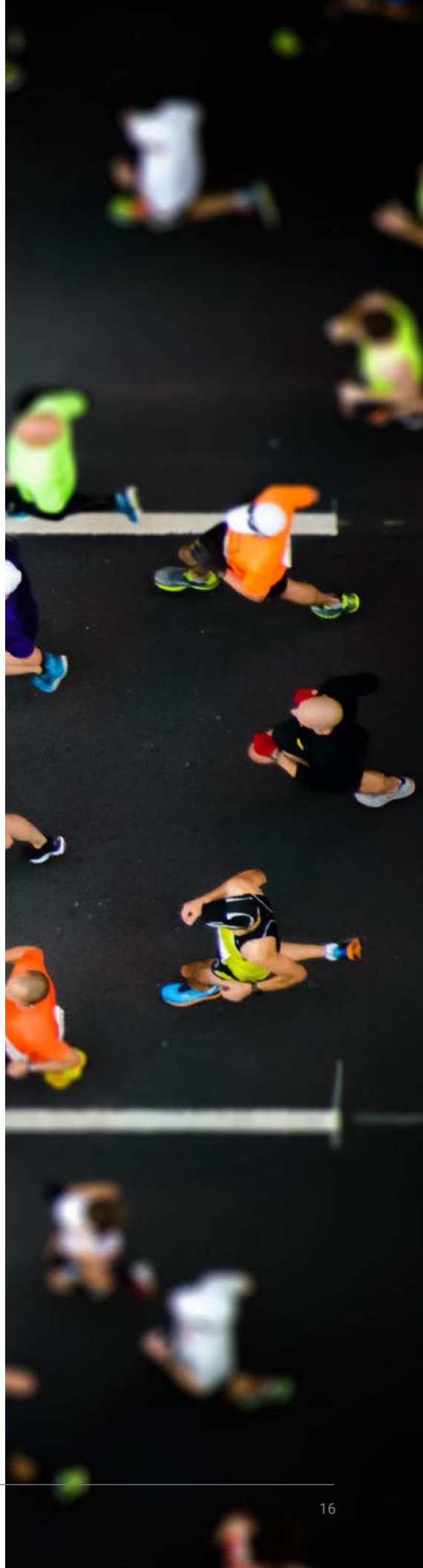
Team CMT is looking for members!

If you, a family member, or a friend would like to help support HNF's programs and fund vital research, please consider joining the team.

TO LEARN MORE Click Here!

Looking for participants for the 2022 TD Bank Five Boro Bike Tour and the TCS New York City Marathon.

Email courthey@hnf-cure.org to participate.



Family Planning #1: IVF

When it comes to family planning & CMT, there are evergrowing concerns, questions, and scientific developments that can seem overwhelming and have us questioning, "Where do we start?" The Hereditary Neuropathy Foundation aims to shed light on this vast topic with a 3 Part Family Planning Series.

In Part 1: IVF & CMT, we heard from Genetic Counselors Tara Jones of Cedar-Sinai and Laura Rust of Mayo Clinic about what to expect if you are considering IVF. During this in-depth 90-minute CMT-Connect webinar, Tara & Laura broke down the fundamental genetics, stages, and costs involved as well as the emotional factors.

Watch webinar: CLICK HERE! **To view presentation slides (only) from the webinar:** CLICK HERE!

Have a topic you would like CMT-Connect to cover? **EMAIL:** CMTCONNECT@HNF-CURE.ORG

PAST WEBINARS

- Guided Meditation
- Work From Home Job Training & Placement
- CMT & Telemedicine
- Align with Happiness
- CMT & Capture Proof
- CMT & Genetic Testing
- CMT & Covid-19
- Healing from the Inside Out
- CMT Resources with Inspire
- Dating & CMT
- How to Exercise in the Pool with Bernadette Scarduzio
- accessibleGO.com: A New Way to Travel with Disabilities
- Bemer Technology
- Panetta Physical Therapy
- CMT & Balance
- CMT & Your Nutrition
- CMT&Me App
- CMT & Exercise
- Mobi Mats
- Surgery & CMT
- CMT & Finances
- Ability360 Sports & Fitness Center
- Active Hands
- Jamal Hill ~ Paralympic Swimmer
- CMT & Microcirculation
- Cannabis & CBD for CMT
- CMT & Canine Companion
- Mental Health & CMT
- Pain Series: Part 1 - Do I need Surgery?
- Pain Series: Part 2 - Nutrition
- Accessible College
- Family Planning #1: IVF
- AFOs for CMT
- SORD Deficiency

VIEW PAST WEBINARS:
Click Here!

Could CMT's Awareness Campaign Begin with CMT (Country Music Television)?

Following the recent interview of country music star Alan Jackson with Jenna Bush Hagar on the TODAY Show, where he revealed that he has balance issues related to his CMT, Prevention magazine contacted HNF for more information about CMT. HNF Founder, Allison Moore was quoted in the article:

> *But there is hope for the future of the disease. "As a fellow CMT patient, I feel complete empathy for Alan Jackson and his struggles living with this disease for over a decade," says Allison Moore, founder and CEO of the Hereditary Neuropathy Foundation. "Today we stand proudly on the forefront of the first potential drug to treat CMT. We've never been more hopeful and excited to help the millions of CMT families like Alan Jackson's live long and healthy lives." – Read the full article here.*

There was an impressive and supportive social media outreach by people living with CMT thanking Alan Jackson for helping raise recognition of Charcot-Marie-Tooth disease, which has always suffered an awareness problem. The funny name and rare nature of CMT have been cited as potential reasons for the lack of knowledge about the disease. Many have been waiting for a well-known personality to bring awareness similar to the way Michael J. Fox has for Parkinson's, and Lou Gehrig did for ALS. Isn't it interesting that CMT's awareness campaign may have just gotten it's kick-start from a CMT star?!

This is an exciting time with lots of opportunities to support CMT research as more and more biotech and pharma companies are entering the marketplace to bring therapeutics to market to treat the many different types of CMT. Please consider making a donation to support research for your type of CMT today.

Donate Here!

Credit: Prevention By: Arielle Weg

Ask Lainie

I'm pretty sure fall gets the "favorite season" award for people living with CMT. Personally, my body just works better with pumpkin spice lattes, crisp (not too hot & not too cold) air, and the return of all my favorite tv shows.

Of course, one of the best parts about fall as a leg brace (afo) wearer is that there are way more fashion and shoe options to choose from. I love that after a long hot summer in pants & maxi dresses, I can finally show a bit of leg by pairing short dresses (not too short) with tights and a fab pair of tall boots.

Here are a few of the most common questions people ask me about shopping for boots with AFOS:

What size should I buy?
This depends on the boot. If it's not available in a wide width and/or does not have removable footbeds or insoles (many do!), I typically buy boots 1 1/2 sizes up from my "normal" AFO shoe size. I typically look for wide or extra wide widths. The exception are stretchy boots with side zippers (like the Michael Kors ones featured in the Post) that go all the way down allowing better on/off access.

How do you prevent shoes and orthotics from slipping inside the boots?
If one shoe or both are too large, they make "shoe fillers" that can be inserted inside the boots. For slippage not related to size, You can also use double stick tape or Velcro tabs to better secure your brace/foot to the boots and prevent extra movement.

How do you stop boots from squeaking when you walk?
An easy & quick solution for annoying friction sounds (actually created by sections of the shoe rubbing against each other) is to sprinkle baby powder underneath. If the sole is not removable, sprinkle the powder at the edges of the inner sole. The baby powder makes the seams of the shoe slightly more slippery, so they can rub against each other more smoothly sans any sound. Another solution I use regularly, is to take a dryer sheet and insert it inside your boots between your foot and the shoe. It works!

Read our Post, "**Finding Mr. Right Boot**" for more tips and shop our favorite boots for AFO wearers this season.

Xo

Lainie

Lainie Ishbia, MSW
Disability Speaker & Blogger
Trend-ABLE

NEUROTOXIC DRUG CAUTION

CORINNE WEINSTEIN, CLINICAL ONCOLOGY PHARMACIST AT CANCER CENTERS OF COLORADO-GOOD SAMARITAN, DENVER, COLORADO

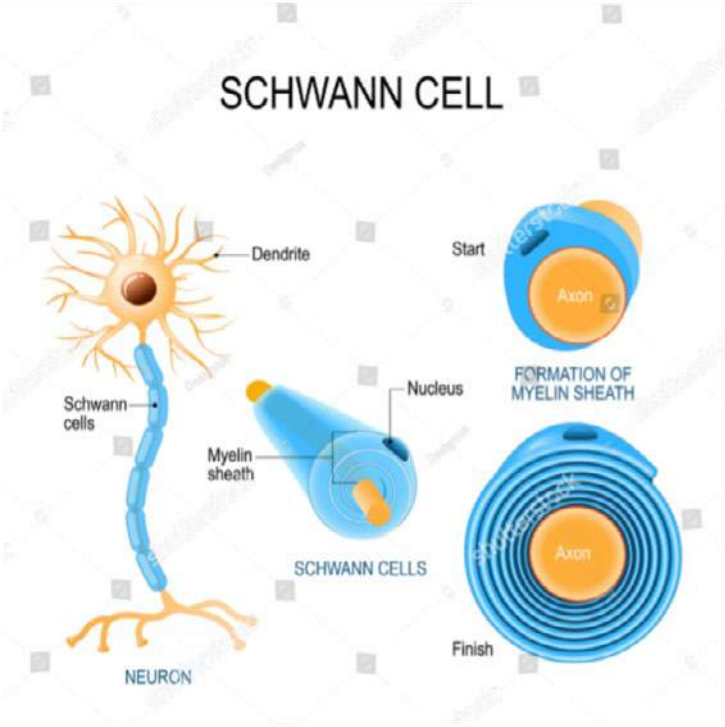
Cardiac Medications

A majority of cardiac/blood pressure medications are not associated with an increased risk of neuropathy. However, there are a few notable exceptions (see below).

Heart/Blood Pressure Medications

Amiodarone (Pacerone®, Nexterone®)

- Amiodarone is a medication used to treat arrhythmias (irregular heartbeat). It works by blocking certain electrical signals in the heart that can cause an irregular heartbeat.
- The exact mechanism of amiodarone induced neuropathy isn't completely understood. However, it is thought that amiodarone has a direct impact upon Schwann cells, which are cells of the peripheral nervous system that wrap around axons of motor and sensory neurons to form the myelin sheath. Damage to Schwann cells results in a demyelinating neuropathy. Amiodarone can cause both motor (strength nerves) and sensory (sensation/pain nerves) neuropathy.
- Risk factors include increased dose and duration of therapy (doses >200 mg daily having the highest risk), and pre-exsisting neuropathy such as CMT.
- Amiodarone-induced neuropathy is fairly common, with a cumulative incidence of ~3%.
- Once amiodarone is stopped, like other neurotoxic medications, symptoms/nerve damage can improve. However, amiodarone has an extremely long half-life (time it takes for the amount of a drug in your body to reduce by half) between 60-142 days. This means it could take several months to be cleared from your body, so improvement would also be delayed until the drug is cleared from your system. For CMT patients, this improvement may be even further delayed (or nonexistent) given preexisting nerve impairment.



Hydralazine (Apresoline®)

- Hydralazine is a vasodilator used to treat high blood pressure. Vasodilation allows blood to flow more easily through blood vessels. As a result, the heart doesn't have to pump as hard, which in turn lowers blood pressure.
- The risk of hydralazine-induced neuropathy appears to be low, with few studies available to study the risk.
- Hydralazine-induced neuropathy appears to be related to the dose and is more common in slow acetylators – a patient whose liver cannot completely metabolize/detoxify drugs. This leads to a vitamin B6 (pyridoxine) deficiency, which results in typical neuropathy symptoms like numbness or tingling in extremities.
- In the case study which first demonstrated this relationship, the patient's symptoms resolved with a lower dose of hydralazine and vitamin B6 supplementation.

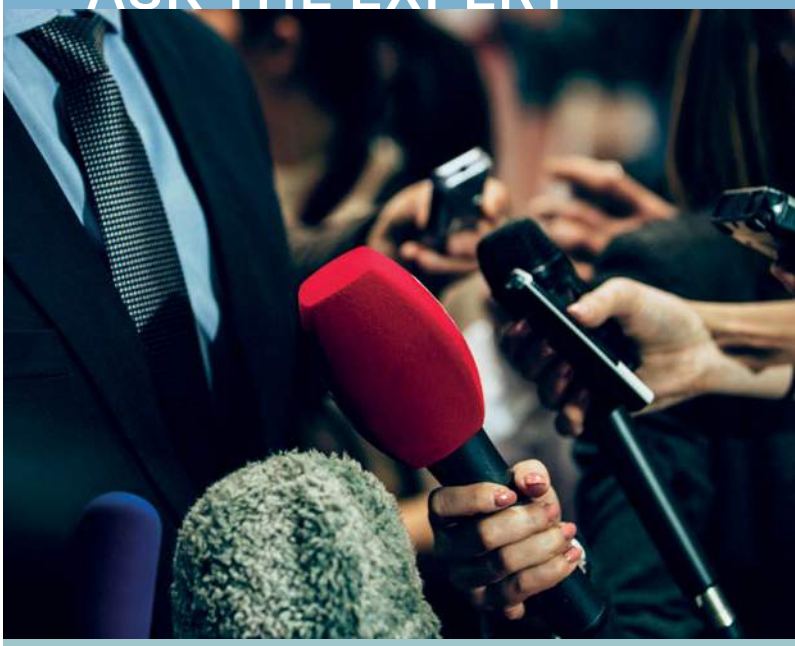
(continued on next page)

- For CMT patients, however, if neuropathy worsens on hydralazine it may be recommended to stop therapy all together as symptoms may not improve on a lower dose. High doses of vitamin B6 are also not recommended for CMT patients, as high doses can be neurotoxic.
- Again, data regarding this relationship is limited and the majority of patients treated with hydralazine do not develop neuropathy.

Take away points

- If possible, CMT patients should avoid amiodarone whenever possible due to the well-documented association between amiodarone and neuropathy. There may be cases where the benefit of amiodarone therapy outweighs the risk of neuropathy. Always discuss with your doctor before stopping or starting amiodarone.
- Hydralazine has a lower risk of neuropathy, with only a few studies demonstrating this risk. Short durations of therapy and lower doses are unlikely to cause neuropathy symptoms. CMT patients who are also known "slow acetylators" should likely avoid hydralazine whenever possible. Luckily, there are many other blood pressure medications that are readily available with no known risk of neuropathy. Again, always discuss the risks and benefits of hydralazine with your doctor before starting or stopping the medication.

ASK THE EXPERT



Do you ever wish you could have direct access to a neurologist for your CMT questions? Now you can! HNF continues to feature real questions from CMT patients across many topics. Submit your questions from our site to the Directors of the HNF Centers of Excellence, Dr. Jafar Kafaie for St. Louis University School of Medicine, St. Louis, MO, and Dr. Florian Thomas for Hackensack University Medical Center & Hackensack Meridian School of Medicine, Hackensack, NJ

Q: Can siblings have different types of CMT?

A: Dr. Kafaie:
Variation in the clinical presentation is common in all genetic disorders, including CMT. This means that two siblings carrying the same mutation won't have the same clinical presentation, age of onset, and so on. However, a patient can carry two pathogenic variants in two different genes, but it is scarce.

HAVE A QUESTION?
www.hnf-cure.org/ask-the-expert

New Center of Excellence: University of Illinois at Chicago

CHARLES ABRAMS, M.D., PH.D. UNIVERSITY OF ILLINOIS AT CHICAGO

Q: TELL US ABOUT YOURSELF:

I am a fellowship trained, board certified, neuromuscular neurologist who sees patients with CMT and does research to find a cure for CMT1X, the most common genetic subtype of the X-linked form of CMT.

Q: WHY IS CMT YOUR PASSION?

I enjoy seeing patients and helping them navigate the clinical and research world of CMT. I think we are on the cusp of bringing a number of new treatments from the lab to the clinic.

Q: TELL US WHAT PATIENTS WILL EXPERIENCE WHEN THEY COME TO YOUR CENTER?

We have a multidisciplinary approach. All patients will see a genetic counselor, physical and occupational therapists and as needed, an orthotist, a pulmonologist, nutritionist and social worker.

Q: WHAT DO YOU LOVE MOST ABOUT YOUR PRACTICE?

Being able to make a difference in patients' lives.

Q: HOW CAN PATIENTS MAKE AN APPOINTMENT AT YOUR CENTER?

Patients can call or email.

UI Health Hospital and Health Sciences System
Outpatient Care Center
1801 W. Taylor St., Suite 4E
Chicago, IL 60612

Appointments
Phone: 312-996-4780
Fax: 312-413-7716

Contact Persons
Linda Querry, RN
Email: lquerry@uic.edu
Phone: 312-355-0510

Jessie Alverio (Clinic Coordinator)
Email: yalverio@uic.edu
Phone: 312-996-4780

HNF's CMT Centers of Excellence

The national network of HNF-designated Centers of Excellence (COE) provides patients with resources to find hubs of expertise in caring for and treating CMT, as well as locations where CMT research is being conducted. Our primary goal is to ensure care results in positive outcomes for each individual patient's clinical experience. We are honored to partner with these premier Centers and their leading experts to improve the future for people living with CMT and families with inherited neuropathies.

ARIZONA

Barrow Neurological Institute
602-406-8144
Dr. Shafeeq S. Ladha

ARKANSAS

Arkansas Children's Hospital
*Pediatric Center of Excellence
501-364-1850
Dr. Aravindhan Veerapandiyan

CALIFORNIA

Cedars-Sinai Medical Center
310-423-4268
Dr. Richard Lewis

Stanford Neuroscience Health Center Neuromuscular Clinic
*Pediatric Center of Excellence
650-723-6469
Dr. Robert Fisher (Adults) Dr. Joy Day (Pediatrics)

UCLA Department of Neurology
310-794-1195
Dr. Halabi Anasheh

COLORADO

Children's Hospital Colorado
*Pediatric Center of Excellence
720-777-2806
Dr. Michele Yang

CONNECTICUT

Hospital for Special Care
Charles H. Kaman Neuromuscular Center
860-612-6305
Dr. Kevin Felice

FLORIDA

University of Florida (UF) Health
352-294-5000
Dr. James Wymer

University of Miami
Professional Arts Center (PAC)
305-243-7400
Dr. Mario Saporta

AdventHealth Neurology at Winter Park
407-303-6729
Dr. Nivedita Jerath MD, MS

ILLINOIS

Ann and Robert H. Lurie Children's Hospital of Chicago
*Pediatric Center of Excellence
312-227-4471
Dr. Vamshi Rao

Rush University
312-942-5936
Dr. Ryan Jacobson

UI Health Hospital and Health
Sciences System
Outpatient Care Center
312-996-4780
Dr. Charles Abrams

KANSAS

University of Kansas Medical Center
Landon Center on Aging
913-945-9926
Dr. Jeffrey Statland

MASSACHUSETTS

Brigham and Women's Hospital
Department of Neurology
617-525-6763
Dr. Anthony A. Amato

MICHIGAN

University of Michigan
734-763-2554
Dr. Dustin Nowacek

MISSOURI

St. Louis University Medical Center
314-977-6177
Dr. Jafar Kafaie

MU Health Care
612-624-7745
Dr. Karim Salame and Dr. Vovant Jones

MINNESOTA

M Health Fairview Clinics & Surgery Center – Maple Grove
612-624-7745
Dr. David Walk

NEW JERSEY

Goryeb Children's Hospital
*Pediatric Center of Excellence
973-971-5700
Dr. Jahannaz Dastgir

Hackensack University Medical Center
Neuroscience Institute
551-996-8100
Dr. Florian Thomas

NORTH CAROLINA

University of North Carolina
984-974-4401
Dr. Rebecca Traub

Atrium Health Neurosciences Institute-Charlotte
704-446-1900
Dr. Urvi Desai

NEW YORK

Columbia University
Department of Neurology
212-305-0405
Dr. Thomas Brannigan

TEXAS

Austin Neuromuscular Center
512-920-0140
Dr. Yessar Hussain

OREGON

Oregon Neurology
541-868-9430
Dr. Michael Balm

WASHINGTON

St. Luke's Rehabilitation Institute
509-939-8079
Dr. Gregory Carter

University of Washington Medical Center
206-598-0058
Dr. Nassim Rad

Please visit our Center of Excellence for more information.
www.hnf-cure.org/centersofexcellence

*Pediatric Center of Excellence

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We have partnered with Wine Insiders to offer a collection of wines for purchase to toast along with us during the holiday season. **Hereditary Neuropathy Foundation will receive 35% of your entire wine order** on all purchases made now through Friday, 12/31.

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Events

CMTeeitUp A Success

On October 4, 2021, supporters flocked to the Evanston Golf Club in Skokie, IL, to raise funds for Charcot-Marie-Tooth research. Guests played golf or platform tennis - and some just came for the evening reception featuring live music by Big Boss & The Toes! The evening reception also included a silent auction.

Hosts Gretchen & Rod Cappiello are humbled by the guests' enthusiasm and generosity.

"Our friends came out in full force to support the cause - not only donating money, but offering up exciting auction items like original artwork, sunset sail cruises, private parties, vacation homes and exclusive golf rounds. Everyone shared the unique opportunities they had to offer to support HNF. It was an amazing day and we are so thankful!"

The funds raised will allow HNF to continue advancing their passion-driven research and programs supporting many CMT patients and families.

THANK YOU to all the donors and sponsors that contributed to the CMTeeItUp event for your tremendous support. Sponsors included CDW, Veem, TravisMathew and Tito's Handmade Vodka.

$180,000 was raised for the Hereditary Neuropathy Foundation!!

Jaxson's Crusaders Shotguns & Guitars Clay Shoot

On Saturday October 16, 2021, the Flynt Family and their close friend Heather Guerrero held the Jaxson's Crusaders 3rd Clay Shoot to raise money for gene therapy research. The Flynt's son, Jaxson, was diagnosed with Leigh syndrome C12orf65 seven years ago and they have been raising money for research ever since.

The family-friendly event included a 100-Round Sporting Clay Shoot, Silent Auction and Live Country Music. The clay shoot had 174 shooters and around a total of **275 participants raising over $75,000.**

"We are blown away by the contributions from our friends and family who came out to support our Jaxson. Thank you to everyone for your support. It was an amazing day and we are so grateful!"

–Lindsey Flynt, Jaxson's Mom

Donate to Jaxson's Crusaders

Publication of this newsletter was made possible with the financial support of Pharnext.