THE COALITION FOR HEMOPHILIA B

HEMOPHILIA B NEWS

NATIONAL NONPROFIT ORGANIZATION

SUMMER 2024

Community Strong!

CONTENTS

THE COALITION FOR HEMOPHILIA

MISSION

TO MAKE QUALITY OF LIFE THE FOCAL POINT OF TREATMENT FOR PEOPLE WITH HEMOPHILIA B AND THEIR FAMILIES THROUGH EDUCATION, EMPOWERMENT, ADVOCACY, AND OUTREACH.

Elevating Each Other Through Music:
The Growth and Power of Human Connection

BY RENAE BAKER

Since its inception in 2018, the BEATS music program has evolved into a thriving community centered around music, friendship, and personal growth. More than just a workshop, BEATS fosters a supportive environment where individuals with hemophilia B can connect, inspire, and uplift one another. The program's expanding reach and deepening impact are a testament to the power of music to transform lives.



"The benefits of this program are long-lasting," according to Kim Phelan, COO of The Coalition for Hemophilia B. "I've seen the program help alleviate depression and boost self-confidence. I love that people of all ages and abilities participate. What participants learn in four days is amazing. I've seen miracles happen in this program."

The program's success is undeniably linked to the generous support of CSL Behring, Sanofi, Novo Nordisk, Medexus, and CVS. Their financial contributions and informative sessions were instrumental in enriching the BEATS experience.

"It's not about the final product, but the journey to get there," reflects Rick Stark, a returning BEATS participant. "This program has become a haven for Coalition B members to challenge themselves and grow together. Witnessing the collective progress is incredibly inspiring."

Newcomer teen Jayden shares Stark's enthusiasm, calling BEATS "amazing." The program's supportive environment and unexpected learning opportunities ignited a passion for music within him. Beyond new friendships, Jayden discovered a newfound sense of belonging in the "B Family."

Teenager Landon expressed heartfelt gratitude to the sponsors of BEATS 2024, recognizing the challenges faced by the community. "I'm thankful for the sponsors, volunteers, and the Coalition for Hemophilia B that make this program possible. Our community deals with numerous obstacles, from chronic pain and limitations to anxiety and depression. Music is an incredible therapy for us!"





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The cornerstone of BEATS is its diverse music workshops, led by professional musicians, culminating in a final concert. From brass and woodwinds to guitar, piano, strings, and vocals, participants had the chance to explore their musical passions. The collaborative spirit extended beyond the classroom, with some instructors joining their students on stage, inspiring a new generation of musicians.

"Watching my sons flourish on stage transformed me from a worried parent to a fervent believer in the power of music," shared Lady J, a Minnesota Blues Hall of Famer. The BEATS program ignited a spark in the Hemophilia B community, inspiring a collective determination to overcome challenges. As participants discovered their voices, they found strength, resilience, and a profound sense of belonging.

"Nashville's collaborative spirit, where up to nine songwriters can contribute to a single track, inspired the heart of our BEATS program," shared professional musician Shelby Smoak, co-instructor of the 6th annual event held at the Music City Sheraton in Nashville. "This collaborative approach is essential to understanding the power of collective creativity. We all have the potential to elevate each other."

Several returning attendees elevated their roles as both participants and leaders this year. A prime example is Chris Maddix, who has immersed himself in the program for six consecutive years. With increasing experience, he has found educational offerings invaluable, from musical storytelling to gig planning. Chris took on leadership by facilitating a "The Rhythm of Reflection" session, exploring the deep bonds formed through music.

A crowning moment of BEATS 2024 was the collective recording of "We Are the World." This monumental collaboration, made possible by generous sponsors and Adam Smith's visionary leadership, showcased the power of unity and the transformative nature of music.

During the finale, teenage Landon's guitar performance alongside Izzy and Nathan F showcased his personal growth throughout the BEATS program. Elec Simon's drum circle was a standout moment for him, where participants found a collective rhythm and a shared sense of accomplishment. "Everyone was staying in tempo, and it sounded awesome. Great things can be accomplished when working together!"

Returning speaker Betsy Koval, RN BSN, a CSL Behring Patient Resource Navigator, discussed the steps in receiving gene therapy. Also returning from Novo Nordisk was Hemophilia Community Liaison Dan Bull, who presented Six Powerful Tools for Self-Advocacy.

Diane Dimon, from CSL Behring, explained the mechanics of stress and led the group in meditation techniques. Cassandra Titus, Sanofi Community Relations and Education Manager joined live and presented Ben Hale from a remote location. Ben, a professional stage performer, singer, songwriter, and guitar player, told his hemophilia story and played some original music, including a song he'd written for his wife.

At seventy-seven years old, Roberta S captivated us with her bubbly spirit and fierce determination to thrive. She also discussed her healthy habits in an adorable, self-effacing manner. She shared her family's history with bleeding disorders and performed her song, 'The Baffling Malady.'


















USA








the Beats





Shelby's words, "Everybody can elevate the other person," encapsulate the spirit of BEATS. Through music, we uplift individuals and strengthen the entire community.

Thank you to our sponsors for their generous support!

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Beats Music Program 2024 What Participants Had To Say:

"It was a lot of fun to see people with all different kinds of musical skills and abilities come together at Ocean Way Recording Studio to record a version of "We Are the World." It was interesting to see the technical side of making music and participate in a community-building experience."

"It's the one time of year that I can hang out with my two sons and all three of us can relax with no fear of injuries, non-community criticism or medical crisis."

"This program is amazing for those that want to learn and become more confident in themselves and their music abilities. Thank you to the sponsors and the Coalition for Hemophilia B for this amazing experience."

"It is a time to be with fellow musicians that also have Hemophilia B and we all laugh, cry, and encourage each other together."

"The Beats Music Program means art and creativity to me. It means love and being with family. It means feeling totally supported as a bleeder and as a person."

"Music has such a positive impact. In a world with far too much negativity, this is something everyone can genuinely look forward to!"

"I was almost to the point where the pain in my knee was so bad that I ignored my guitar completely, but now, thanks to the Beats program, "Carolyn"(my guitar) has made a reappearance in my house! My wife is annoyed, but as I get better, she'll get used to her!"

"The Beats program has changed our lives for the better. I hope it continues far into the future!"

"The Beats program is like family to me. I have seen the younger generation play their instruments, and I know they will be playing on television one day when I become an old man. "

"It was an honor and a privilege to attend this program."

"The Beats Program is a crucial part of bringing the hemophilia B community together. It's become the highlight of my summers, and I look forward to participating again next year."

"The Beats program has helped me so much. For most of my life I've been afraid of public speaking. Performing was never an option, but being with my B family, I did it. Every opportunity to try was given and encouraged to all. I am so thankful for all the sponsors that help the coalition."

"This project will definitely be at the top of my list of all-time greatest projects that I have participated in."

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2024 Men's Spring Education and Empowerment Program

BY SCOTT HAYES

WELCOME TO VEGAS

"What happens in Vegas stays in Vegas!" At least, that's what I've been told. But this time, something happened in Las Vegas that didn't stay behind: strong personal connections and top-notch information!

The 2024 Spring Men's Education & Empowerment Program held May 30th to June 2nd brought together a group of over 30 men bound by their common bond to the hemophilia B community for a world class education program and an unforgettable experience. We call them "blood brothers." Most were either men with hemophilia B or fathers of one or more children with hemophilia B. This year, I was particularly impressed by the number of Spanish-speakers ("hermanos de sangre"), which were about one-third of the men present. Our message is reaching beyond the English-speaking sphere, and of that we can all be proud!

COMMUNITY-BUILDING

There is a huge need for personal connections in the men's hemophilia B community. First, many men often lack close friends and don't realize the mental and physical health consequences this has. Second, since about one-third of new cases of hemophilia B are due to a spontaneous gene mutation, many men living with hemophilia B are born into families where no one else can help them understand this disease since no one else in their family has it. And third, hemophilia B is an extremely rare disease with only about 7,000 diagnosed cases in the USA. With a population of over 326 million people, that means less that 1/100th of 1% of people in the USA are living with hemophilia B. With such a tiny fraction of the population, it can be extremely difficult to connect with others who share the same condition. I know this from lived experience. When I



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Men's Comm
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was diagnosed with hemophilia B in rural Nebraska, I was told there were only 6 cases in the whole state at that time.

One form of networking is time to caucus with one another about various things we are going through. During these networking sessions I learned that we all have "different" stories of how we live with hemophilia and yet the stories all "rhyme" with similarities across our lived experiences. Knowing how someone else has navigated through their medical and professional challenges with hemophilia helps each of us to better navigate our own challenges.

Another form of networking we have is a tradition called the Bleeder Olympics. This is a session where we engage in low-impact activities that are safe for people living with hemophilia B and provide additional opportunities to connect and bond at an emotional level. It's also a needed break for our brains to recover from the extensive learning throughout the sessions earlier in the day.

EXCELLENT EDUCATION

I never cease to be amazed at the educational buffet for the mind and heart offered at these long weekend retreat programs. I will highlight just a couple of the many capable speakers whose wisdom we sat under.

Dr. David Clark has a Ph.D. in chemical engineering. He presented on emerging therapies for hemophilia B and reminded us that every patient is different. Dr. Clark educated us on Factor 9 products and the long process of how they come to market. Many

Factor 9 products take about 10 years and over a billion dollars in research and development costs, helping us to understand why they were so expensive. Additionally, he also covered inhibitor treatments, rebalancing agents, and gene therapy. It was exciting for me to hear about the ongoing developments in these areas, especially in the last few years. Dr. Clark is the CHB Chairman and a long-time advocate for and educator and friend of the hemophilia B community.

Lee Hall spoke insightfully about the Power of Community. Lee reminded us that each of our communities has its own special point of focus. Communities bring us a greater sense of belonging and happiness. Lee inspired us that what unites us as a community coping with blood disorders are our common values and purpose, forward-focused rituals, shared life stories, connectedness and mutual support, trust that builds new ideas, interactions that motivation borrowed from others, a sense of identity and mutual accountability, and creating and encouraging shared experiences among our community.

Lee reminded us that sharing our hemophilia stories with others is what has propelled research and development forward. We have value, worth, influence, and the ability to make someone feel connected and part of this community.

OUR MULTI-FACETED COMMUNITY

It's important to acknowledge that people are part of our community for different reasons, some because

they have been diagnosed with hemophilia B themselves, and others because they live with those diagnosed with hemophilia B. One of the nice features of the educational program was the breakout sessions that allowed these different perspectives to caucus together and learn among themselves. For those living with hemophilia B, we are already receiving better care and living longer much longer than people with hemophilia lived historically. That's side of our story is great! The flip side of it is that now are the first hemophilia generation to live through age-related challenges which we need to navigate in new ways. For those who live with us, they are learning what treatments will allow more active and fulfilling lifestyles without the need to be overprotective.

Having hemophilia, even severe hemophilia, is no longer the automatic death sentence of a short life span that it was once presumed to be. As I like to say, "You can do whatever your hematologist says you can do!" And, "Your diagnosis is NOT your prognosis!" We'd also like to thank our generous sponsor for making the program possible. Thank you, Pfizer!

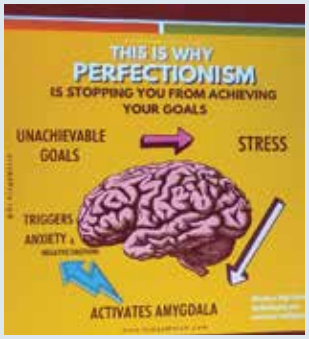
Pfizer

COMMENTS:

"Wow! What an event! I met a first timer and welcomed him into the hemophilia B family, the same as someone did for me my first time. His daughter had him come to the Men's Retreat Program and I'm so glad she did!"

"I loved the brotherly love that was shown to everyone that was there!"

"I enjoyed being able to meet new members of the community and reunite with old friends. I always feel better about myself when I leave any CHB program. It feels like family."



"I liked being able to connect with & hear from fellow blood brothers, dads, family members/ siblings, and others with different perspectives around the bleeder experience!"

"It was a great event to meet up with people with the same diagnosis and learn how they are living their life."

"My favorite part of the program was the friendships I made. I left there with a couple solid new friendships with men from my area and our families will continue to get together."

"CHB men's program changed my life. When I went to the program I came there one person and when I left I was changed. I gained so much knowledge, love, sense of brotherhood, new friends and I feel like I have a new extension to my family now. Absolutely loved the program."

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THE NAT LATHROP MUSIC SCHOLARSHIP: AWARDEE UPDATE

BY ROCKY WILLIAMS

For teens and preteens with hemophilia B, the Nat Lathrop Music Scholarship, offered by the Coalition for Hemophilia B, is a springboard to learn and grow through music.

Named after Nat Lathrop, whose family recognizes the profound connection between music and mental health, this scholarship has been a source of opportunity for aspiring musicians in the hemophilia B community since 2021. In remembrance of Nat on his birthday, his family wanted a meaningful way to honor his time on this earth. In partnership with the Coalition for Hemophilia B, they launched the Nat Lathrop Music Scholarship and in its first year, every single applicant was able to receive a scholarship!

Now in its 4th year, awardees are granted scholarships that can go towards instrument rental/purchase, band/orchestra fees, music lessons, performance camp, etc. that will help them on their journey as lifelong musicians.

What are our cohort of awardees up to?

We caught up with some of our past scholarship recipients to see how music continues to shape their lives and help them cope with the challenges of hemophilia B.

Nathan is learning a ton from his drum teacher and fellow community member, Adam. Nathan says, "Music makes me happy and being able to play music now is a great feeling." Nathan credits this happiness to the scholarship, but he also has a lot to be proud of. Nathan continues to get better and better on the drums. His dedication and passion for music are inspiring!

Benjamin was awarded piano lessons. He says that Music brings him joy and it has become his source of entertainment when he doesn't feel well. He also says, "Playing this instrument makes me feel empowered and confident." He wants everyone to know that music can help you heal and relieve stress.

Tristan is using the scholarship to expand his percussion horizons. "The scholarship helped me pay for my private lessons of snare (in the percussion family)," Tristan said. "This allowed me to practice all year long with my teacher to get better with snare and drumming techniques for marching and concert band. It helped me also to get ready for placement auditions in the marching band next year and I am happy to say that I obtained the position I wanted thanks to the lessons paid by the scholarship."

Additional Comments:

Nathan shared, "Music makes me happy and knowing I may be able to make others happy one day playing music is a wonderful thing."

Nathaniel expressed, "Regardless of struggles in my life, or with my bleeding disorder, music has been a constant source of comfort and joy."

Madelynne reflected, "Music has always been a part of my life, even before I was born. My mom teaches music so I've always been around it and it's part of my family."

If you would like to donate to this worthy cause, please visit:
https://www.hemob.org/donate

HEMOPHILIA LANDSCAPE *UPDATES*

BY DR. DAVID CLARK

A number of the items below were presented at the World Federation of Hemophilia (WFH) World Congress, April 21–24, 2024 in Madrid, Spain or at the International Society on Thrombosis and Haemostasis (ISTH) Congress, June 22–26, 2024 in Bangkok, Thailand. Copies of the abstracts (summaries) of the presentations are available for free on the organizations' websites.

Factor Levels in Hemophilia B Carriers

Ignoring women with hemophilia has probably kept us from learning more about the mechanism of hemophilia and clotting in everyone. Our general understanding of hemophilia seems to break down when applied to women. That suggests that there are things about bleeding and clotting that are still to be discovered.

The first important clue is that in women, bleeding does not seem to be determined by factor levels [Johnsen J, CDC webinar: Understanding Factor Levels and Bleeding in Hemophilia Genotype-Positive Females, May 16, 2024]. Our general understanding (in men) is that the lower the levels of clotting factors VIII and IX, the higher the chances for bleeding. We know that is not strictly true. Within each of the categories of severity, mild, moderate and severe, we know that about 15% of patients don't fit the bleeding behavior expected for their factor level. For instance, in severe hemophilia, defined as a factor level below 1% of normal, about 15% of patients bleed more mildly than expected. Similarly, some people with mild hemophilia bleed much more severely than would be expected. This is known as the difference between genotype (genetics) and phenotype (actual experience). We don't know why there is a difference, but similar unknown things may be going on in female bleeders to cause them to bleed more than their factor levels would suggest.

Our history of conclusions about female bleeders demonstrates our hubris about our knowledge of genetics. First, we thought that women couldn't have hemophilia because they have two X-chromosomes, so even if one chromosome had a defective factor gene, the other would provide enough clotting factor. After all, men only have one X-chromosome and that provides enough clotting factor in men without hemophilia.

Then we discovered that in female cells, one of the X-chromosomes is inactivated. It turns out that it is dangerous for a cell to have two active copies of the same chromosome. The inactivation appears to be random, so on average, about 50% of a woman's cells would have an active X-chromosome from their father and about 50% would have an active X-chromosome from their mother. If one of her inherited X-chromosomes had a mutated factor gene, the woman should still be able to produce about a 50% level of "good" clotting factor. Based on our current understanding 50% is the lower limit of normal, so she shouldn't really bleed.

Then we discovered that the X-chromosome inactivation could be "skewed." Instead of a 50:50 ratio of active X-chromosomes, the ratios in some women could actually be 70:30 or 80:20 or even worse. If the 70 or 80% of cells were producing the defective clotting factor, that could be the reason why those women bleed. So, we said, "Aha, that must be the answer!" That's about where we are today, but surprisingly, recent research has failed to confirm our suspicion.

6/23/24 At ISTH a group of Japanese researchers presented a study that suggests that skewing of X-chromosome inactivation is not associated with factor levels in women. They admit that their study was small and further research is needed, but over the last few years several other similar studies have come to the same conclusion. Thus, skewing might not be the answer, or may only be part of the answer. (My main concern with these studies is that they have usually looked at whole-body genomes. I wonder whether they would find something different if they looked just at the liver cells that actually produce the clotting factors. Is the skewing different there?) [ISTH abstract PB0264]

Fortunately, researchers are now starting to include women in more studies. This will hopefully give us more information about the bleeding/clotting process in all

humans. We're already finding things that we didn't expect, and that's exciting. Science always learns more from unexpected results.

Inhibitors in Hemophilia A and B Might Occur by Different Mechanisms

6/24/24 Hemophilia B suffers from having too few patients as subjects for research. Because of that, some of the knowledge about hemophilia B is extrapolated from studies of hemophilia A. We figure that the disorders are similar enough that what is true for A might also be true for B. This is even more so the case for inhibitor research where there are even fewer B inhibitor patients. We've thought that this is the best we can do because of the limited resources and numbers of inhibitor patients available for B.

At ISTH, a group from China looked at the immune responses that cause hemophilia patients to develop inhibitors. They did gene sequencing of individual peripheral blood mononuclear cells (PBMCs) from hemophilia A and B inhibitor patients, a truly tedious but useful undertaking. PBMCs are white blood cells that are part of the immune system. They found unexpected differences. B inhibitor patients had higher T cell ratios while A inhibitor patients had higher B cell ratios. The explanation of this is complex, but the bottom line is that A and B inhibitors may arise through different pathways.

This could help explain some of the differences we see in inhibitor incidence and treatment. B patients have a much lower incidence of inhibitor development, for instance, than do A patients. Bs tend to develop allergic reactions to factor IX, while allergic reactions of As to factor VIII are rare. Immune tolerance induction (ITI) is a method to tolerize patients against their clotting factor. It is fairly successful in As but often ineffective in Bs. Hopefully, these findings will spur more research on inhibitors in hemophilia B. [ISTH abstract OC 41.3]

My Elbow Seems OK. Why Does It Hurt?

4/23/24 Joint damage (hemophilic arthropathy) should be detected and treated as soon as possible. Otherwise, it can become irreversible. At WFH, a group of Japanese investigators looked at the cases of three teenage boys with hemophilia who had developed irreversible joint damage to their elbows. They had all had elbow bleeds in childhood, but once the bleeds were resolved, they were forgotten. It was only later, in their teens, that they started noticing problems extending their elbows and started experiencing pain.

What the researchers realized is that this is probably a more common condition than is usually assumed. They report that full elbow extension in daily life is rare and therefore patients rarely feel pain or inconvenience. Thus, elbow damage tends to be seen as asymptomatic (free of symptoms) and neglected until the damage has become permanent. The authors recommend that elbows be carefully monitored from childhood. [WFH abstract PP-092]

Hemlibra for Hemophilia B!?

7/10/24 Hemlibra is a treatment for hemophilia A. It is an antibody that mimics the action of factor VIII by binding to both activated factor IX (FIXa) and factor X to activate the factor X. It is not indicated for the treatment of hemophilia B, but recent studies show that it might actually be beneficial for a few hemophilia B patients. How does that work? Both factor VIII and Hemlibra bind to FIXa, but at slightly different places on the FIXa molecule. If the mutation on the factor IX molecule that causes the patient's hemophilia B is in the area where factor VIII normally binds, that might keep factor VIII from being able to do its job, so the patient bleeds. However, if the other area on the factor IX molecule where the Hemlibra antibody binds is not affected by the mutation, Hemlibra could still bind to it and then bring that mutated factor IX molecule into contact with factor X to continue the clotting reactions.

This would only work for the small number of hemophilia B patients who have a mutation that inhibits factor VIII from binding to factor IX, but those patients might benefit from using Hemlibra instead of clotting factor. Hemlibra is a subcutaneous treatment with a very long half-life, so injections are easier and less frequent. With more research, doctors may be able to identify the patients who could use Hemlibra, just from the genetic sequence of their factor IX gene. [Lee K et al., Blood, online ahead of print 7/10/24]

COVID and Hemophilia

4/22/24 Four papers at WFH looked at aspects of the COVID-19 pandemic on people with hemophilia. We were all encouraged to get the COVID vaccines, but those were only approved for intramuscular (IM) injection. However, WFH guidelines state that the safest type of injection for hemophilia patients is subcutaneous (SC) injection and IM injections are to be avoided because they can produce hematomas and bleeding that might need treatment with factor. A researcher in London looked at what actually happened at their treatment center during the pandemic.

Sixty-three parents of children with hemophilia were contacted and 39 responded. The proportion of patients receiving IM injections of the vaccine was 48.7%, while 33.3% received their vaccine by SC injection. The proportion receiving no vaccine was 15.5% and 2.5% were unknown.

For IM vaccination, 10.5% of patients required treatment for an adverse reaction compared to 7.8% with SC vaccination. It was not reported how many of the adverse reactions involved bleeding. Overall, complications to vaccination were comparable for both groups. Only four patients were on prophylaxis prior to vaccination. The study also did not look at whether SC injection of the COVID vaccines was as effective at reducing the risk of COVID. A much larger group would probably be needed to study that.

This suggests that IM injection of the COVID vaccines is relatively safe, but may require treatment in some patients, as may SC injection. [WFH abstract MP-033]

A study from Turkey looked at treatment compliance during the pandemic. In 50 patients (44 male, 6 female) from one treatment center, they found that 90% did not interrupt their treatment during the pandemic. Of the five who did see an interruption, one stopped because of COVID and two because they couldn't obtain factor. Thus, treatment compliance was not an issue in general, but some patients needed additional help. [WFH abstract PP-100]

Two additional papers looked at weight gain in hemophilia patients during the pandemic. It is already known that obesity rates in the bleeding disorders community are higher than in the general population and may lead to other health issues, including mental health issues. A group from the UC Davis HTC in California looked at weight gain in 399 of their patients using pre-existing data from comprehensive care visits between 1/1/19 and 12/31/22. They found a median weight gain of 7.25 lb overall. Patients in the 35 – 55 years age group had the highest gains, followed by the 17 – 25 years group. [WFH abstract PP-152]

A Canadian group looked at whether the weight-gain trend continued after the pandemic wound down. Weight gain during the pandemic is attributed to restrictions on physical activities and increased time at home with increased access to food. In 76 children at their Toronto HTC, they indeed found weight gain during the pandemic, but they also found that after the pandemic, the children tended to revert to their pre-pandemic weights. In fact, they found a slightly lower median body mass index (BMI) post-pandemic than pre-pandemic. [WFH abstract MP-036]

Artificial Intelligence and Hemophilia Treatment

Artificial intelligence (AI) provides an important tool for science and medicine. It is able to look at large amounts of data and find connections which are otherwise very difficult or impossible for humans to uncover. The usefulness of AI largely depends on the accuracy of the material that it is trained on. Consumer applications, like ChatGPT, are trained on the whole internet, which contains both reliable and unreliable information. Therefore, its outputs are often wrong. In science and medicine, though, we can train AI using only reliable information and thus make its findings more accurate.

4/23/24 At WFH, a group from Brazil and Germany reported on an AI system that they have built based on meticulously compiled data on hemophilia from early research to present day studies. According to the authors, "This system was able to interpret and process a variety of questions, ensuring it could cover everything from the basics of the disease to innovative treatment techniques." Further, "The accuracy and depth of knowledge it offers are akin to having an expert at one's fingertips." The authors have published previous reports on their AI systems such as a 2022 article describing an AI tool for estimating hemophilia B severity from point gene mutations. [WFH abstract PP-003 and Lopes TJS et al., Front Bioinform, 2:912112, 2022]

A group from Italy also presented a study at WFH looking at the feasibility of predicting inhibitor development risk from genetic data. They found that they could predict, with 60 – 70% accuracy, which hemophilia A patients would develop inhibitors. This was a feasibility study to see whether it was even possible. The authors point out that more data and more detailed patient information could improve the model further. [WFH abstract PP-065]

Finally, a group from Japan has published a study using AI to interpret ultrasound data for diagnosis of joint damage. Ultrasound imaging (US, ultrasonography) has recently become a method of choice for examining joint damage in patients with hemophilia, but it involves specialized diagnostic skills. The authors report that AI can be used beneficially to interpret US results in detecting the presence or absence of hemophilic joint damage (arthropathy) and synovitis. They used 3435 US images from patients with hemophilia A or B, with or without inhibitors. The age range was from 10 years to 60 years. They found a number of cases of joint damage

in patients who had recorded no bleeding symptoms, which is significant because even minor joint damage can accumulate over time. Their model appears to have good potential for the diagnosis of joint damage. [Nagao A et al., Res Pract Thromb Haemost, 8:e102439, 2024]

New ISTH Clinical Guidelines for Hemophilia Treatment 6/19/24 The ISTH has released the "International Society on Thrombosis and Haemostasis Clinical Practice Guideline for Treatment of Congenital Hemophilia A and B Based on the Grading of Recommendations Assessment, Development, and Evaluation methodology." This has caused a lot of controversy in the hemophilia treatment community. It is different in several aspects from the "WFH Guidelines for the Management of Hemophilia," 3rd edition, which were published in August 2020.

The WFH guideline was consensus-based, being developed by a large panel of hemophilia treaters according to how they actually treat hemophilia. The ISTH document used the GRADE method (Grading of Recommendations Assessment, Development, and Evaluation methodology), which evaluates the scientific reliability of the information on which the guidelines are based. These give different answers.

What the ISTH report actually tells us is that most of the methods used to treat hemophilia haven't been rigorously tested according to the highest scientific standards. That's true, and we know it. However, that doesn't mean that your medical treatment is deficient. As explained by Mannucci in an accompanying article in the same issue of the Journal of Thrombosis and Haemostasis, in the GRADE method, the gold standard is results from randomized clinical trials (RCTs).

While some hemophilia studies are done using RCTs, most are not. That's not surprising in a small field like hemophilia B. RCTs are expensive, time-consuming and usually require larger numbers of subjects – things that aren't always available to us. Instead, hemophilia treaters rely more on another important tool that science gives us, scientific reasoning, plus their own experience. They know, even without studies, that getting factor IX into your bloodstream will help minimize your bleeding – and there are lots of ways to do that to accommodate all the variations from patient to patient.

The ISTH report only makes two recommendations for hemophilia B (11 for A). The first is that prophylaxis is recommended over on-demand treatment. We've actually been assuming that to be true for a long time (based on scientific reasoning and small non-RCT studies), but it's nice to have it confirmed (although with only "moderate-certainty evidence" according to ISTH). The other recommendation for hemophilia B is that prophylaxis can be carried out using plasma-derived products, standard half-life recombinant products or extended half-life (EHL) recombinant products. This is where the potential trouble comes in. According to ISTH, there is not enough scientific evidence to determine which of these three types of products is better, so they can't recommend one over another. This is one of the ways that science operates that seems to mystify lay people. Note that ISTH is not saying that there is no difference between the three product types; they're just saying that since the studies haven't been done, they can't say whether there is a difference.

This is no problem within the scientific/medical community – we understand what this means. The problem is when something like this gets out into the general population and is misunderstood. You can imagine an insurance company reading the ISTH report and assuming that it is saying that there is no difference among the three types of products: "Hooray! This is what we've been waiting for. The ISTH, the most prestigious international organization for hemostasis, says there is no difference. We can quit paying for those expensive EHL products and just give everyone cheaper plasma-derived products. We'll save tons of money!" People fear that the same could also be true in countries that have national health plans and buy one, or just a few, products for the country's whole hemophilia B population.

ISTH has written their report very carefully to try to prevent that misunderstanding, but in a society that doesn't understand or value science, that doesn't always work. We'll just have to see what happens. [Rezende SM et al., J Thromb Haemost, online ahead of print 6/19/24; see also Mannucci PM, J Thromb Haemost, online ahead of print 6/19/24]

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HEMOPHILIA LANDSCAPE EMERGING THERAPIES

BY DR. DAVID CLARK

Summer 2024 –There is a huge amount of new product development going on in hemophilia B. The potential new products can be separated into three categories, 1) improved factor products, 2) rebalancing agents and 3) gene therapy. These updates are divided into those three categories. Within each category, the entries are generally listed in order of the names of the organizations developing the product. A number of the items below were presented at the World Federation of Hemophilia (WFH) World Congress, April 21–24, 2024 in Madrid, Spain, or at the International Society on Thrombosis and Haemostasis (ISTH) Congress, June 22–26, 2024 in Bangkok, Thailand. Copies of the abstracts (summaries) of the presentations are available for free on the organizations' websites.

IMPROVED FACTOR PRODUCTS

These are improved versions of the factor products that most people with hemophilia B are currently using, also including products for inhibitor treatment. The improvements include longer half-lives and delivery by subcutaneous injection. This section also includes updates on some of the current products on the market.

CSL's Idelvion at Dosing Intervals of 14 Days or More

CSL Behring

6/20/24 CSL Behring markets Idelvion, an extended half-life (EHL) recombinant factor IX product in which factor IX is fused to an albumin molecule. Because the body has a special method for keeping albumin in circulation longer, the albumin portion of the Idelvion molecule fools the body into also keeping Idelvion in circulation longer. Although Idelvion was licensed with dosing intervals up to 21 days for selected patients, there has been minimal real-world experience with greater than 14-day dosing.

Researchers in Italy enrolled 14 subjects (9 severes, 5 moderates) who had been on Idelvion prophylaxis with 14-day or longer dosing frequencies. Their average age was 46.3 years. Only one subject had a dosing frequency of 21 days; the rest were every 14 – 15 days. The subject's average trough levels had been 4.4% on their previous standard half-life (SHL) products, which increased to 7.8% on Idelvion, even with the longer dosing intervals. One of the important benefits of EHL products, besides less-frequent dosing, is that they tend to produce higher trough levels, and thus better bleed protection. The results showed an average annualized bleeding rate (ABR) of 0.6 with six of the subjects reporting no bleeds. These results provide more evidence that 14 to 21-day dosing intervals are feasible for some patients. [Coppola A et al., Haemophilia, online ahead of print 6/20/24]

A Subcutaneous Idelvion?

CSL Behring

7/15/24 CSL has published the results of a study in which they replaced the wild-type (WT, i.e., normal) factor IX molecule in Idelvion with the higher-activity Padua variant factor IX molecule. The Padua variant has a single amino acid change from WT factor IX – the 338th amino acid is changed from arginine to leucine. This change is abbreviated as "R338L" where "R" stands for arginine and "L" stands for leucine. This small change gives the R338L factor IX molecule about eight times higher clotting activity than the WT molecule. Most current recombinant factor IX products use the WT molecule, but both current gene therapy products use the Padua variant. CSL also looked at two other variants, including the DalcA variant that was being developed by Catalyst Biosciences before that project was dropped.

They looked at the three variants plus marketed Idelvion in both laboratory studies and in hemophilia B mice. The R338L variant gave better results than the other two variants. It had a 4- to 5-fold higher clotting activity than Idelvion's WT factor IX and was just as quickly activated by activated factor XI. They looked at both intravenous (IV) and subcutaneous (SC) injection in the mice and found similar effectiveness against bleeding in both Idelvion and the R338L variant, when the variant was dosed at one-quarter the amount of protein as Idelvion. The R338L variant also give a slightly longer half-life than Idelvion.

These results appear very promising. CSL has not announced whether they will continue working to develop an SC Idelvion-R338L product, but we'll keep watching. (Interestingly, in the Discussion section of the article they gave a plug for CSL's Hemgenix as a "preferred option" for hemophilia B treatment, so it's not clear whether they want to pursue an SC product.) [Schön K et al., J Thromb Haemost, online ahead of print 7/15/24]

Gensciences Reports on Longer-Acting Factor VIIa for Inhibitor Treatment

6/23/24 Gensciences, a Chinese company, is developing SS109, a longer-acting activated factor VII (FVIIa) product for treatment of hemophilia A and B patients with inhibitors. SS109 is fused to the Fc domain of an antibody molecule to give it a longer half-life. At ISTH, they presented results from their Phase Ib/II clinical study. In 27 male hemophilia patients with inhibitors, they evaluated various doses of SS109 for efficacy, safety, immunogenicity and half-life. The product was generally well-tolerated with half-lives three to seven times longer than NovoSeven. Gensciences is also developing longer-acting factor VIII and factor IX products. [ISTH abstract OC 21.5]

Sevenfact Approved for 2mg Vials

6/20/24 HEMA Biologics distributes Sevenfact, a recombinant activated factor VII (FVIIa) product for treatment of hemophilia patients with inhibitors that was developed by LFB, a French biotech company. FDA approved a new 2 mg dosage strength for Sevenfact. [FDA supplement approval letter 6/20/24]

HemoSavin: Small Molecules for Hemophilia Treatment

6/23/24 HemoSavin Pharmaceuticals is developing small molecule drugs for hemophilia treatment. Most current hemophilia treatments are larger molecules, mainly proteins. Smaller molecules are generally easier and less expensive to produce, stabilize and transport, and may be more suitable for use in less-developed countries. Many small molecule drugs can also be taken orally, which is the goal for HemoSavin. They hope to be able to treat hemophilia A and B, as well as von Willebrand Disease.

At ISTH, HemoSavin presented laboratory results for several of their potential candidate compounds. This involved spiking factor VIII- or factor IX-deficient plasmas with the compounds and observing the effects on clotting time. Their best-performing compound, YSISK-CH, showed a 35% reduction in clotting time in factor VIII-deficient human plasma and a 40% reduction in factor IX-deficient plasma. They plan to present additional work in hemophilic mice at the National Bleeding Disorders Foundation meeting in September. They have not yet disclosed the compositions or mechanisms of action for their compounds. [ISTH abstract PB0249]

Sanofi's Alprolix in PUPs and Older Adults

6/25/24 Sanofi markets Alprolix, an extended half-life recombinant factor IX product in which factor IX is fused to the Fc-domain of an antibody molecule. Because the body has a special method for keeping antibodies in circulation longer, the Fc portion of the Alprolix molecule fools the body into also keeping Alprolix in circulation longer. Sanofi has published additional analyses of their Phase III clinical studies of Alprolix focusing on previously-untreated patients (PUPs, usually young patients). In a group of 33 PUPs, they found that prophylaxis with Alprolix delayed the time to the first spontaneous bleed compared with on-demand treatment with Alprolix. Prophylaxis also reduced the subject's bleeding risk. [Nolan B et al., Eur J Haematol, online ahead of print 6/25/24]

7/23/24 Sanofi has also published a study on the long-term outcomes for Alprolix prophylaxis in patients over 50 years of age from the Phase III studies. About 62% of the patients with hemophilia B had comorbidities (other medical conditions) and more than half were taking at least one additional medication besides Alprolix. Many of the patients had pre-existing joint damage and pain. The results showed low bleeding rates consistent with those of the overall study group (all ages). They also found improvements in health-related quality of life and in joint health, even in those with target joints. [Quon D et al., Blood Adv, letter 7/23/24]

TiumBio Presents Phase I Results for TU7710 for Inhibitor Patients

6/24/24 TiumBio, a Korean biotech, is developing TU7710, a longer-acting activated factor VII (FVIIa) product for treatment of hemophilia A and B patients with inhibitors. TU7710 consists of a FVIIa molecule fused to the protein transferrin. This gives TU7710 a half-life about six to seven times longer than NovoSeven.

At ISTH, they presented interim results from their Phase Ia study evaluating the safety and pharmacokinetics (PK) of TU7710 in healthy male volunteers (without hemophilia or inhibitors). The subjects were pre-treated with warfarin to reduce their clotting factor levels. The results at four increasing dose levels showed that TU7710 did reduce clotting time and produced no significant adverse reactions, including no inhibitor formation against TU7710 and no thrombotic complications. In the study, TU7710 exhibited a half-life about six to seven times longer than NovoSeven. The study is continuing with a fifth (higher) dose level. [ISTH abstract PB0509]

REBALANCING AGENTS

Rebalancing agents tweak the clotting system to restore the balance so the blood clots when it should and doesn't clot when it shouldn't. The clotting system is a complex system of clotting factors that promote clotting and anticoagulants that inhibit clotting. In a person without a bleeding disorder, the system is in balance, so it produces clots as needed. In hemophilia, with the loss of some clotting factor activity, the system is unbalanced; there is too much anticoagulant activity keeping the blood from clotting. Rebalancing agents mainly reduce or inhibit the activity of anticoagulants in the system. Most of these agents work to help restore clotting in people with hemophilia A or B, with or without inhibitors.

Centessa Presents Updates on SerpinPC

4/22/24 Centessa is developing SerpinPC, an inhibitor of the anticoagulant activated protein C (APC) as a rebalancing agent. SerpinPC is a biweekly or monthly subcutaneous injection for treatment of hemophilia A and B patients, with or without inhibitors. Centessa presented updates on their ongoing clinical studies at WFH.

To date, they have found that biweekly (every two weeks) injection reduced the median annualized bleed rate (ABR) to 1.0 and reduced the number of target joints by 94%. There were no significant safety issues. [WFH abstract LBA-FP-003]

Novo Nordisk Presents Updates on Concizumab

Novo Nordisk is developing concizumab, an inhibitor of the anticoagulant tissue factor pathway inhibitor (TFPI) as a rebalancing agent. Concizumab is a daily subcutaneous injection for treatment of hemophilia A and B patients, with or without inhibitors. Novo presented updates on their Phase III clinical studies at WFH and ISTH.

4/23/24 At WFH, they presented data on physical activity in patients on concizumab prophylaxis in the Phase III studies. They used ActiGraph accelerometers to more accurately measure physical activity. Subjects wore the ActiGraph for two weeks before beginning concizumab treatment to give a baseline and then for eight weeks at the end of the main part of the study while still on concizumab. Subjects were also interviewed about their participation in sporting activities. Subjects without inhibitors showed no significant change in physical activity after starting concizumab. However, subjects with inhibitors, both As and Bs, showed significant increases in activity. [WFH abstract MP-018]

6/24/24 At ISTH, Novo gave an update of the study results in patients without inhibitors who had been treated for 56 weeks. The hemophilia B patients had a median ABR of 1.3 on concizumab, compared with an ABR of 2.1 during a pre-treatment period of 24 weeks when the subjects were on normal factor prophylaxis. [ISTH abstract OC 40.4]

Also at ISTH, they reported on treatment of breakthrough bleeds (BTBs) in subjects on concizumab. BTBs occurred most frequently in joints, occurred spontaneously and were of mild or moderate severity. Depending on the patient, BTBs were treated factor VIII or IX concentrates or with bypassing agents for the inhibitor patients. Most were resolved with a single infusion. [ISTH abstract OC 40.5]

Pfizer Updates on Marstacimab

Pfizer is developing marstacimab, an inhibitor of the anticoagulant tissue factor pathway inhibitor (TFPI) as a rebalancing agent. Marstacimab is a once-weekly subcutaneous injection delivered via an auto-injector pen for treatment of hemophilia A and B patients, with or without inhibitors.

4/23/24 At WFH, Pfizer presented data from their Phase III studies on increasing the dose of marstacimab from 150 mg to 300 mg, each once a week. After 180 days at the 150 mg dose, subjects weighing 50 kg (110 lb) or more or who had two or more bleeds in six months could switch to the higher 300 mg dose. They found that the increased dose was safe and effective, which suggests that doses can be tailored to individual patients to optimize bleed control. [WFH abstract MP-028]

Pfizer also presented results from a study of pre-filled auto-injector pens for dispensing marstacimab. The results showed that the pens could be used safely and effectively, with a short learning curve. [WFH abstract MP-030]

6/24/24 At ISTH, Pfizer also presented results from studies of BTB treatment in patients on marstacimab. Looking at levels of various marker molecules that indicate whether a person is experiencing thrombosis (too much clotting) after taking additional factor or bypassing agent to treat a BTB, they found in general, no elevated levels and thus no evidence of thrombosis. This suggests that BTBs can be treated safely and successfully while on marstacimab. It also supports the evidence from the Phase III studies that unlike some of the other rebalancing agents, marstacimab may be less likely to produce thrombotic complications in use. [ISTH abstract PB0518]

Sanofi Presents Updates on Fitusiran – Including Potential Use in Rare Bleeding Disorders

Sanofi is developing fitusiran, an inhibitor of the anticoagulant antithrombin, to control bleeding in patients with hemophilia A and B, with or without inhibitors. Fitusiran is a once-monthly subcutaneous injection. It is a silent interfering RNA (siRNA) that inhibits the production of antithrombin, an anticoagulant.

4/22/24 One of the important features of the rebalancing agents is that they work for both hemophilia A and B. In fact, theoretically, they should also work for other clotting factor deficiencies that are less prevalent. With that in mind, a group of French researchers have tested fitusiran in mice that are deficient in factor X. They found that fitusiran does indeed increase clotting and reduce bleeding in the mice. This suggests that with careful use, the rebalancing agents could be further employed for treatment of rare bleeding conditions. [WFH abstract FP-012]

6/23/24 At ISTH, Sanofi presented results on major surgeries in patients on fitusiran. During the clinical studies, 60 major surgeries were performed, including 24 in inhibitor patients. Hemostatic control (control of bleeding) was rated excellent or good in a majority of surgeries with no treatment-related safety concerns. [WFH abstract OC 14.2]

6/24/24 Partway through their Phase III clinical studies, investigators saw evidence of thrombosis in some of the subjects. Apparently, antithrombin levels were being lowered too much, which made it too easy for the clotting system to produce clots. Sanofi lowered the dose of fitusiran to target an antithrombin level of 15 – 35% of normal, a higher level than in the initial studies. At ISTH, they reported on the results of the dose lowering in terms of the effect on the incidence of thrombotic events. They found that the lower dose gave an incidence of 0.82 thrombotic events per 100 patient-years compared to about 2.9 events per 100 patient-years at the original dose (my calculations from their data). Thus, the risk of thrombosis was significantly reduced by the new dosage guidelines. [ISTH abstract OC 40.2]

6/26/24 Hemophilia News Today is reporting that FDA is currently reviewing Sanofi's Biologic License Application (BLA) for fitusiran with a decision expected by 3/28/25. [Hemophilia News Today article 6/26/24]

Vega Therapeutics is Developing VGA039 to Inhibit Protein S

6/25/24 Vega Therapeutics is developing VGA039, a monoclonal antibody inhibiting the anticoagulant protein S. They are initially targeting von Willebrand Disease as an indication, but as mentioned above, rebalancing agents are expected to work for a number of different clotting disorders including hemophilia. In laboratory experiments with blood from hemophilia A patients, they found that VGA039 improved clotting. [ISTH abstract PB1110]

GENE AND CELL THERAPY

Gene therapy is the process of inserting new, functional factor IX genes into the body to allow it to produce its own factor IX. Cell therapy is the transplantation of whole cells that have been modified to perform a specific function such as producing factor IX.

Be Bio Approved for Clinical Studies of Genetically-Engineered B Cells for Factor IX Production

Last fall, we told you about Be Biopharma, which is developing BE-101, a cell therapy for hemophilia B in which B cells are genetically modified using CRISPR/Cas9 techniques to produce factor IX. B cells are a type of white blood cell that are produced in the bone marrow from stem cells that continuously produce all of the body's blood cells. They are part of the immune system; they recognize antigens (foreign materials that cause an immune response) and produce antibodies against those antigens. B cells continuously divide to produce new B cells that have a "memory" so the new cells can produce the same antibodies as the original cells. B cells also have a long half-life of about 17 years.

Be Bio's technique harvests B cells from a patient and then genetically engineers them in the laboratory using the CRISPR/Cas9 method to insert good factor IX genes into the cells. The transformed cells are then expanded (grown into additional cells) and transplanted back into the patient's blood stream where they will eventually find their way to the bone marrow. The cells re-engraft into the bone marrow where they will continuously produce factor IX.

5/28/24 FDA has approved Be Bio's IND giving them permission to begin human clinical studies of BE-101. This will be only the second-ever clinical study of a B cell medicine and the first for hemophilia. The study is expected to begin in the last half of 2024. Additionally, on 6/4/24, FDA granted Orphan Drug Status to BE-

101. This gives the company a seven-year marketing exclusivity after licensure, exemption from FDA User Fees and eligibility for tax credits on the clinical studies. [Be Biopharma press releases 5/28/24 and 6/4/24]

6/23/24 At WFH, Be Bio presented some initial results from their development studies. They implanted factor IX-producing B cells into mice and found that the cells continued to produce factor IX for at least 168 days. They also reported that the cells produced up to 60 nanograms (ng) of factor IX per hour (h) per million cells. That sounds impressive, but a few calculations will show whether it seems feasible.

The specific activity of pure, 100% active factor IX is about 200 IU/milligram (mg). That's 0.0002 IU/ng. Thus, their production rate is about 0.012 IU/h/million cells. If we have a hemophilia patient who infuses about 3000 IU every three days (72 h), they are using about 42 IU/h. Dividing 42 IU/h by 0.012 IU/h/million cells means that the patient would need to have about 3500 million or 3.5 billion B cells, producing factor IX. The body has about 10 billion B cells total, so about one-third of them would have to be transformed into factor IX-producing cells. That amount of B cells would get our patient into the factor IX range that they normally achieve with prophylaxis. Getting them up into the normal range would take even more. We'll be following Be Bio's progress with interest to see how this works out. [ISTH abstract OC 11.3]

Belief Biomed Provides Update on BBM-H901 Gene Therapy

6/24/24 Belief Biomed, a Chinese company, is developing BBM-H901, a gene therapy for hemophilia B that is delivered by an adeno-associated virus (AAV) vector and uses the Padua high-activity factor IX gene. At ISTH, they reported on their clinical study that began in 2019. Out of ten patients, eight have had no bleeding events. One patient re-aggravated a previous hematoma and had to be treated with factor at the 19-week point but remained in the study. One patient lost factor IX expression after 130 weeks. The nine remaining patients have not been on prophylaxis since treatment. Their average factor IX level is 38.4%, which has remained steady for up to 209 weeks (4 years). There have been no deaths or serious treatment-related adverse events. There were no signs of thrombosis or inhibitor development. [ISTH abstract OC 30.4]

CSL Provides Updates on Hemgenix Gene Therapy

CSL Behring markets Hemgenix, a gene therapy for hemophilia B that is delivered by an adeno-associated virus (AAV) vector and uses the Padua high-activity factor IX gene.

4/22/24 At WFH, they presented results from the Patient Reported Outcomes, Burdens and Experiences (PROBE) questionnaire which was given to the clinical study participants at enrollment (baseline), during the lead-in period, and at 6 months and 1, 2, and 3 years after treatment. The PROBE score ranges from zero (worst) to 1.0 (best). In the 48 participants, they found an average increase in PROBE score of 0.04 units at the six-months and one-year points that continued for all three years. Nine subjects (22.5% of total) had an increase of 0.1 or more, but five subjects (12.5%) had a decrease of 0.1 or more. At three years, there was a 23.8% decrease in the number of subjects who had experienced acute pain in the past 12 months. [WFH abstract PP-164]

4/23/24 At WFH, CSL also reported on factor IX levels in the clinical study subjects three years after treatment. At three years post-treatment, 1.9% of subjects had factor IX levels of less than 5% of normal, 5.6% had levels between 5 and 12%, 48.1% had levels between 12 and 40%, 33.3% had levels above 40%. That is, at three years after treatment, 53.7% of subjects were in the mild hemophilia category and 33.3% no longer had hemophilia based on their factor levels. [WFH abstract FP-006]

6/22/24 At ISTH, CSL presented results for the three subjects in their Phase IIb study who have now been followed for five years. The subjects' average factor IX levels after treatment remained stable at 40.7% of normal at one year to 46.7% at five years. At five years, their individual levels were 39.0%, 46.8% and 51.2%. One participant had two breakthrough bleeds during the first year, both treated with factor. He has not had a bleed since, and the other two participants have not had any bleeds. All of the subjects discontinued prophylaxis after treatment. There have been no safety events, no liver enzyme elevations, no inhibitor development and no thrombotic events. [ISTH abstract OC 02.3]

6/24/24 At ISTH, CSL announced that they are beginning a Phase IV (post-licensure) study that will follow Hemgenix patients for 15 years post-treatment. Their results will be compared with those of a control group who will receive normal factor IX prophylaxis. CSL hopes to enroll about 250 subjects in each group. [WFH abstract PB0541]

7/23/24 uniQure, which initially developed Hemgenix and manufactures the product for CSL, closed on the sale of their manufacturing plant in Lexington, MA to Genezen, a contract drug development and

manufacturing organization. Genezen will take over manufacturing of Hemgenix. This is expected to be a relatively seamless transition as most of the current staff are joining Genezen. [uniQure press release 7/23/24]

Pfizer Presents Updates on Beqvez Gene Therapy

Pfizer markets Beqvez (fidanacogene elaparvovec), a gene therapy for hemophilia B that is delivered by an adeno-associated virus (AAV) vector and uses the Padua high-activity factor IX gene.

4/22/24 At WFH, Pfizer presented the results of a study of joint health after treatment with Beqvez during the Phase III clinical study. They looked at the frequency of target joint bleeds from Week 12 after Beqvez treatment to Month 15 and looked at Hemophilia Joint Health Scores (HJHS) at 12 months after treatment. These results were compared with baseline results taken during the six-month lead-in period before Beqvez treatment. The average number of joint bleeds decreased from 4.1 pre-treatment to 0.8 after treatment. The average HJHS decreased from 17.8 to 17.1 over the first 12 months, where a lower score is better. [WFH abstract FP-005]

Pfizer also presented a statistical comparison between their Phase III results and results from clinical studies of BeneFIX, Alprolix, Idelvion and Hemgenix. They compared annualized bleeding rates (ABRs) and the number of patients with zero bleeds for each product. For total ABR, Beqvez was better than BeneFIX, but the differences were not statistically significant for the other three products. The proportion of patients with zero bleeding events was significantly higher for Beqvez than for either BeneFIX or Alprolix, but the differences were not statistically significant for either Idelvion or Hemgenix.

These kinds of statistical comparisons, in which studies are performed under different conditions, can be problematic, especially with the smaller numbers of patients used in most hemophilia studies. Probably inadvertently, Pfizer just showed that based on current data, there is no statistically significant difference between Beqvez and its competitor Hemgenix in terms of ABR or proportion of patients with zero bleeds. The authors point out that with more data, they may be able to do better. [WFH abstract MP-023]

6/24/24 At ISTH, Pfizer gave an update on the results of their Phase III study in subjects who had completed at least 15 months follow-up, to a maximum of four years. The results haven't changed much. The total ABR was 1.3 compared to an ABR of 4.4 during the six-month lead-in period when the subjects were on normal factor IX prophylaxis. No deaths, infusion-related serious adverse events, thrombotic events, or factor IX inhibitor development were reported. [ISTH abstract OC 30.5]

Regeneron Provides Update on Phase I/II Study for CRISPR Gene Therapy

Regeneron Pharmaceuticals and Intellia Therapeutics have been developing a gene editing treatment for hemophilia B. The treatment uses CRISPR/Cas9 technology to insert a new factor IX gene into the genome of liver cells. In the last issue, we reported that Intellia has decided to end the collaboration, and Regeneron will continue the project on its own. However, Intellia is committed to continuing its collaboration until the fall.

6/23/24 At ISTH, the companies provided more information on their Phase I/II clinical study, which has been approved by FDA and is intended to start this summer. The study will look at safety and efficacy as well as dose in up to 70 subjects with severe or moderately severe hemophilia B who are currently on prophylaxis. There will be a six-month to two-year lead-in period during which the subjects will be on normal prophylaxis. Following the one-time treatment, the subjects will be studied for two more years and then enrolled in a long-term follow-up study. [ISTH abstract PB0235]

Bridge RNA

6/26/24 When I give talks on gene therapy, I often get questions about CRISPR. CRISPR is currently the trendiest method in gene editing. Its discoverers won the Nobel Prize in 2020. It is being used extensively in the laboratory – see for instance the item on Be Bio above. However, it comes with challenges when trying to use it inside the body, but Regeneron, see above also, is taking on those challenges.

The trend may now start moving to a newer gene editing method, just published, called "Bridge RNA." Bridge RNA appears to have properties that may get around some of the challenges with CRISPR. I think it's interesting that most of the enzymes that form the basis of these gene editing methods were originally found in bacteria. Bacteria have been doing gene editing since long before humans even knew what a gene was.

So, the next time you ask me a question at a meeting remember "Bridge RNA." It'll make both of us look like we're right on top of things! [Durrant MG et al., Nature, online ahead of print 6/26/24]

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† Once well-controlled (1 month without spontaneous bleeding or requiring dose adjustments on a weekly dose of ≤40 IU/kg), people 12 years and older can be transitioned to 14-day dosing.

IMPORTANT SAFETY INFORMATION

IDELVION®, Coagulation Factor IX (Recombinant), Albumin Fusion Protein (rFIX-FP), is used to control and prevent bleeding episodes in children and adults with hemophilia B. Your doctor might also give you IDELVION before surgical procedures. IDELVION can reduce the number of bleeding episodes when used regularly as prophylaxis.

IDELVION is administered by intravenous injection into the bloodstream and can be self-administered or administered by a caregiver. Do not inject IDELVION without training and approval from your healthcare provider or hemophilia treatment center.

Tell your healthcare provider of any medical condition you might have, including allergies and pregnancy, as well as all medications you are taking. Do not use IDELVION if you know you are allergic to any of its ingredients, including hamster proteins. Tell your doctor if you previously had an allergic reaction to any FIX product.

Stop treatment and immediately contact your healthcare provider if you see signs of an allergic reaction, including a rash or hives, itching, tightness of chest or throat, difficulty breathing, lightheadedness, dizziness, nausea, or a decrease in blood pressure.

Your body can make antibodies, called inhibitors, against Factor IX, which could stop IDELVION from working properly. You might need to be tested for inhibitors from time to time. IDELVION might also increase the risk of abnormal blood clots in your body, especially if you have risk factors. Call your healthcare provider if you have chest pain, difficulty breathing, or leg tenderness or swelling.

The most common side effects of IDELVION are headache and dizziness. These are not the only side effects possible. Tell your healthcare provider about any side effect that you experience, and contact provider immediately if bleeding does not stop after taking IDELVION.

Please see full prescribing information for IDELVION, including patient product information.

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 can also report side effects to CSL Behring's Pharmacovigilance Department at 1-866-915-6958.

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CURRENT PRODUCTS FOR HEMOPHILIA B TREATMENT

BY DR. DAVID CLARK

As of May 2024

Many new families may not be aware of the large number of products available for treatment of hemophilia B. Other patients and families may want an update on the many newer products available. This is a brief overview of the products currently available in the U.S.

One of the most important principles in medicine is that every patient is different. Although we all share many similarities, we also have unique genetic and medical backgrounds. An advantage of the large number of products available is that a patient who does poorly on one product, might have better results with another. Patients are encouraged to work with their physician to find the best product for their needs.

Currently, most hemophilia B patients, except those with inhibitors, are treated with factor replacement products. These products contain the normal factor IX protein to replace the defective factor IX molecules produced by their own bodies. They all require periodic intravenous infusions to maintain the amount of factor IX in the patient's blood at a level required for good hemostasis (adequate clotting). There are improved factor IX products currently under development, as well as a number of non-factor products.

The current products fall into five general categories:
1. Standard half-life (SHL) factor IX products,
2. Extended half-life (EHL) factor IX products,
3. Inhibitor treatment products,
4. Gene therapy, and
5. Ancillary products.

Note, all of these products are only available by prescription.

STANDARD HALF-LIFE (SHL) PRODUCTS

The SHL factor IX products currently available in the U.S. are listed below in **Table 1**.

The four current SHL products all consist of normal human factor IX. They are all descendants of the original plasma-derived concentrates that were developed in the 1960s. The original products were called Factor IX Complex or Prothrombin Complex. They were mixtures of several clotting factors including factors II, VII, IX, and X plus the anticoagulants protein C and protein S. These proteins all have similar chemical structures, which makes them difficult to separate from each other.

The complexes were a huge leap forward in treatment of bleeds, but it was soon apparent that they could not be used in large amounts or for prolonged periods of time because they would cause thrombosis, dangerous unwanted clotting. This prevented their use for prophylaxis or surgery. Factor IX complex products are still on the market but should not be used for hemophilia B treatment because of their safety risks. They are currently used mainly for treatment of liver disease.

AlphaNine, the sole remaining plasma-derived product, was one of the first products to contain highly-purified factor IX without the other factors. It has proved to be safe from thrombotic complications and is still used by a number of patients. The other big change in factor IX products was the introduction of methods for viral inactivation and removal, which happened in the mid-to-late 1980s. Prior to the introduction of those methods, plasma-derived products often were contaminated with infectious agents like hepatitis B and C, and HIV, the AIDS virus. Plasma-derived products are now considered completely safe. There have been no incidences of viral transmission from clotting factor products since the late 1980s, or from any other plasma-derived products since the early 1990s.

One of the main reasons for introduction of recombinant products was viral safety – to eliminate

Table 1: Standard Half-Life (SHL) Factor IX Products Currently Available in the U.S.

Brand Name	Generic Name	Manufacturer	Type
AlphaNine SD	Coagulation Factor IX (Human)	Grifols Biologicals	Plasma-derived
BeneFix	Coagulation Factor IX (Recombinant)	Pfizer/Wyeth	Recombinant – CHO cells
Ixinity	Coagulation Factor IX (Recombinant)	Medexus/Aptevo	Recombinant – CHO cells
RIXUBIS	Coagulation Factor IX (Recombinant)	Takeda/Baxalta	Recombinant – CHO cells

the dependence on human plasma for these products. Another was the ability to produce unlimited amounts of a product without dependence on the limited supply of plasma. Recombinant products are made in animal cells that have been genetically engineered to produce the desired protein. All three recombinant SHL factor IX products are made in Chinese hamster ovary (CHO) cells that are grown in large tanks in a process called cell culture.

A little-appreciated fact is that all recombinant products are also treated for viral inactivation and removal. Although the cells used for cell culture are thoroughly screened to make sure they are safe, it was discovered early on that some of these cells may contain hidden virus genes in their DNA. These viral genes could under some production conditions be "turned on" and introduce infectious viruses into the products. Now, in addition to having manufacturing steps to inactivate and remove any viruses, every batch of product, whether plasma-derived or recombinant, is also tested to make sure there are no known infectious agents present in the final product.

Most hemophilia B patients use recombinant products, but there are some patients who still use **AlphaNine** because it works better for them. The reason for this is unknown, but there are two important possibilities. One is that the recombinant products only contain a single version of factor IX, the most common variant, which is considered "normal" factor IX. However, plasma, which is collected from thousands of donors, contains a whole range of factor IX variants. Many people have small mutations in their genes and produce a factor IX that isn't modified enough to produce hemophilia, but still has some changes that may make it work better or worse in hemophilia patients.

Another possibility is that the animal cells used in cell culture glycosylate the factor IX product differently than human cells do. Many of the clotting factors, including factor IX, are glycosylated after the protein is made. That means that they have carbohydrate chains attached to various parts of the molecule. The carbohydrate chains are strings of sugar molecules linked together (glyco- comes from the Greek word for sweet or sugar). There are many different types of sugars beyond what we think of as "table sugar." We don't completely understand the reasons for these sugar chains, but we know that human cells add on different combinations of sugars than CHO cells do, for instance. These differences may cause variations in how well the products work in some patients.

EXTENDED HALF-LIFE (EHL) FACTOR IX PRODUCTS

The EHL factor IX products currently available in the U.S. are shown below in **Table 2.** All of the EHL products are recombinant.

The body is constantly removing existing copies of proteins from the bloodstream and replacing them with new copies. This is part of the process for keeping the body in good working order. The factor IX proteins introduced by the various products are subject to the same removal process. The half-life is the amount of time it takes for half of the protein to be removed.

The typical half-life of normal factor IX is 23 – 25 hours, although that can vary significantly from person to person. The SHL products all have half-lives similar to that of normal factor IX derived from plasma. That means that a patient using an SHL product has to infuse new factor IX every three days or so. (Note that some of the SHL products, like **BeneFIX**, have developed alternate dosing schemes using higher doses to keep factor IX levels in the needed range for a week or more.) The EHL products use various methods to keep their factor IX in circulation for longer periods of time. These products can be dosed at intervals of one to two weeks, again depending on the patient's individual response.

Alprolix contains factor IX molecules attached to the Fc region of an antibody molecule. The body has a special mechanism to keep antibodies in circulation longer than most other proteins. Antibody molecules are shaped like a Y. The two arms of the Y are the Fab regions of the molecule that bind to viruses, bacteria and foreign proteins to remove them from circulation. The base of the Y is the Fc region that attracts immune cells to destroy anything that the arms bind to. The Fc region is also the part of the molecule that interacts with the system that keeps antibodies in circulation longer. It turns out that linking factor IX to an Fc molecule also keeps the factor IX in circulation longer.

Table 2 – Extended Half-Life (EHL) Products Currently Available in the U.S.

Brand Name	Generic Name	Manufacturer	Type
Alprolix	Coagulation Factor IX (Recombinant), Fc Fusion Protein	Sanofi	Recombinant – HEK cells
Idelvion	Coagulation Factor IX (Recombinant), Albumin Fusion Protein	CSL Behring	Recombinant – CHO cells
Rebinyn	Coagulation Factor IX (Recombinant), GlycoPEGylated	Novo Nordisk	Recombinant – CHO cells

Another aspect of **Alprolix** is that it is made in cell culture in human embryonic kidney (HEK) cells. Using human cells to produce the product potentially produces a factor IX that is glycosylated (has carbohydrate chains attached) more similarly to the factor IX molecules made naturally in the human body. Whether that actually improves the performance of **Alprolix** is unknown.

Idelvion uses a similar method. Its factor IX is linked to an albumin molecule. Albumin is the most prevalent protein in plasma. It thickens the plasma and also carries many other molecules around in the circulation. There is also a special mechanism in the body to keep albumin in circulation longer. Linking factor IX to albumin also improves its half-life.

Rebinyn uses a different method to keep its factor IX in circulation longer. Polyethylene glycol (PEG) is a long water-soluble polymer that has found many uses in medicine including improving the half-lives of drugs. **Rebinyn** uses factor IX with PEG chains attached to the ends of the carbohydrate chains described above in the SHL section. These long PEG chains wave around and coil up randomly around the factor IX molecule. They form a loose shell that tends to hide the factor IX molecules from the liver cells that normally remove factor IX from circulation.

Although the SHL products are very similar to each other, the EHL products are each quite different and may perform differently from person to person. This has been seen in a number of clinical studies of patients switching from SHL to EHL products. Therefore, if one product doesn't work, don't assume that the others would also not perform well.

INHIBITOR TREATMENT PRODUCTS

The products used for treatment of patients with inhibitors are listed below in **Table 3**.

Inhibitors are antibodies that the immune system produces because it thinks that an infused factor IX product is a foreign protein that could be dangerous. Some of these, known as non-neutralizing antibodies, bind to factor IX but don't interfere with its function. Inhibitors are neutralizing antibodies that bind to factor IX in locations on the molecule that prevent it from working. Inhibitors also occur against factor VIII in hemophilia A where they are a major problem.

Inhibitors occur much less frequently in hemophilia B. Only about 3 – 5% (the numbers are hard to pin down) of hemophilia B patients develop inhibitors, but when they do, it can be a very serious problem.

Factor VIII inhibitors can often be eliminated by a process called immune tolerance induction (ITI). However, ITI works poorly in many hemophilia B patients with inhibitors. In addition, many hemophilia B inhibitor patients also develop allergic reactions to factor IX including anaphylaxis, a severe reaction that can be life-threatening. Hemophilia B inhibitor patients are also prone to a kidney disorder called nephrotic syndrome. Most hemophilia B inhibitor patients end up just living with their inhibitor and using bypassing agents to treat bleeds.

Inhibitor treatment products are called bypassing agents because they trigger other parts of the clotting system, bypassing the factor VIII/factor IX step. They work for both hemophilia A and B inhibitor patients, but they don't work as well as a regular factor product would work in a hemophilia patient without inhibitors. They have fairly short half-lives, requiring frequent infusions to treat bleeds, and are expensive. They can be used prophylactically, but most patients just use them for on-demand treatment of bleeds. They are the best option available at present, but fortunately, there are a number of new inhibitor treatments under development.

FEIBA is a plasma-derived version of factor IX complex in which the clotting factors have been activated using a proprietary method. It is used by some hemophilia B inhibitor patients, but because it contains factor IX, it carries a risk of allergic/anaphylactic reactions. The way FEIBA works is not fully understood, but it contains activated factor VII like the other two bypassing agents. The other activated factors in FEIBA probably also trigger other parts of the clotting system.

NovoSeven is a recombinant activated factor VII product. The overall clotting system consists of two pathways, one that depends on factors VIII and IX, and the other that depends on factor VII. Adding activated factor VII triggers that alternative pathway to eventually form a clot. Note that NovoSeven is produced in cell culture using a different microorganism, baby hamster kidney (BHK) cells. The choice of cell type is usually determined by which type works best to produce a particular product.

Table 3 – Inhibitor Treatment Products Currently Available in the U.S.

Brand Name	Generic Name	Manufacturer	Type
FEIBA	Anti-inhibitor Coagulant Complex	Takeda/Baxalta	Plasma-derived
NovoSeven RT	Coagulation Factor VIIa (Recombinant)	Novo Nordisk	Recombinant – BHK cells
Sevenfact	Coagulation Factor VIIa (Recombinant)-jncw	HEMA Biologics	Recombinant – transgenic rabbits

Sevenfact is a new recombinant activated factor VII product. It is similar to **NovoSeven** but made by a completely different process. For **Sevenfact**, rabbits have been genetically engineered to produce factor VII in their milk. The rabbits are milked and the milk purified to capture the factor VII, which is then activated to produce the final product. Producing a protein in a genetically-engineered animal is called transgenic production. It has also been used for other pharmaceutical products approved by FDA. Its advantage is that very large amounts of protein can be produced at relatively low cost. It was originally seen as a way to produce high-quality but lower-cost products for developing countries, but that aspect has yet to be realized.

GENE THERAPY

Gene therapy is the process of inserting new, functional factor IX genes into the body to allow it to produce its own normal factor IX. The single gene therapy product currently available in the U.S. for treatment of hemophilia B is listed below in **Table 4**.

Hemgenix and **Beqvez** both use an adeno-associated virus, serotype 5 (AAV5) for **Hemgenix** and serotype Rh74var (AAVRh74var) for **Beqvez** to deliver the high-activity Padua factor IX gene to cells in the liver. The AAV viral genes are replaced with the factor IX gene, so there is no risk of infection. AAV targets the liver to introduce the new factor IX gene into liver cells, where factor IX is normally made. The results are somewhat variable. Most patients will obtain factor IX levels in the mild hemophilia range (5 – 50% of normal), but a few will see higher levels in the normal range (50 – 150%). The products may also be ineffective in a few patients The duration of the effect, the length of time that factor IX production will last, is currently unknown, but similar, earlier experimental versions have lasted up to 15 years so far.

There are a number of limitations to these treatments. **Beqvez** requires patients to be negative for pre-existing antibodies to the AAVRh74var viral vector. **Hemgenix** does not have a limitation against pre-existing antibodies to AAV5, but their clinical studies show that it was not effective in a patient with an extremely high level.

Neither product is indicated for patients under 18 years of age or for women with hemophilia. There is also a risk of liver inflammation after receiving the infusions, and patients with pre-existing liver damage should only be treated under the supervision of a hepatologist (liver doctor). If liver inflammation occurs, patients are treated with corticosteroids. Untreated inflammation can result in decreased factor IX production, as well as other health effects.

ANCILLARY TREATMENTS

The ancillary products currently available in the U.S. for treatment of patients with hemophilia B are listed below in **Table 5**.

These three products can be used to treat minor bleeds in patients with mild (factor level 5 – 50% of normal) or moderate (1 – 5%) hemophilia. All three are fibrinolytics, which inhibit the breakdown of clots. As soon as the clotting system is activated, the fibrinolytic system, which is part of the healing process, is also activated to start breaking down the clot. In a patient without hemophilia, the clotting process is very rapid compared to the fibrinolytic process, so a good clot is produced that only gradually breaks down over time. In a patient with hemophilia, however, the clotting process is much slower, so inhibiting the fibrinolytic process can make a difference in whether or not a stable clot is formed.

The large number of products available for treatment of hemophilia B increases the chances that every patient can find a product that works well for them. Selecting the best product may be a process of trial and error, but working with an experienced hemophilia treater can shortcut the process. If you think you could be getting better results, don't hesitate to ask your physician.

Table 4 – Gene Therapy Product Currently Available in the U.S.

Brand Name	Generic Name	Manufacturer	Type
Hemgenix	Etranacogene dezaparvovec	CSL Behring	AAV5 vector with Padua FIX gene
Beqves	Fidanacogene elaparvovec	Pfizer	AAVRh74var vector with Padua FIX gene

Table 5 – Ancillary Products Currently Available in the U.S.

Brand Name	Generic Name	Manufacturer	Type
Amicar	Aminocaproic acid	Akorn	Fibrinolytic
Cyclokapron	Tranexamic acid	Pfizer	Fibrinolytic
Lysteda	Tranexamic acid	Ferring	Fibrinolytic

ADVOCACY NEWS

THE COALITION FOR HEMOPHILIA B IS SUPPORTING SEVERAL KEY PIECES OF LEGISLATION

ADVOCACY UPDATE AUGUST 2024

BY GLENN MONES

The Rare Pediatric Disease Priority Review Voucher Program aims to incentivize drug development for rare pediatric diseases. Under this voucher program, a sponsor who receives approval for a drug or biological product for a rare pediatric disease may qualify for a voucher that can be redeemed to receive a priority review for a different product.

The program will expire on September 30, 2024, unless Congress enacts an extension or passes a reauthorization.

HR 4758/S. 2372: The Accelerating Kids' Access to Care Act requires state Medicaid programs to establish a process through which qualifying out-of-state providers may enroll as participating providers for five years without undergoing additional screening requirements. In the Senate, the bill was introduced by Senator Chuck Grassley (R-IA) and Senator Michael Bennett (D-CO).

HR 2666/S. 4204: The Medicaid Value-Based Payments for Patients (MVP) Act removes hindrances to the use of innovative payment structures for cell and gene therapies in Medicaid and commercial insurance. Value based purchasing refers to arrangements in which the price of a drug or therapy is linked to clinical outcomes.

Full articles on these bills will appear on the Coalition's website.

VOICE

WE'RE ALL IN THIS TOGETHER

Advocacy is the way this community expresses our "B Voice" in asking our elected officials and other leaders for the things we need to live happy, healthy lives. There are a number of ways you can get involved and express YOUR B voice! Our B Voice advocacy blog tracks developments related to the Affordable Care Act and speaks out on issues like the Children's Health Insurance Program (CHIP) and charitable premium assistance. You can also register as an advocate and join our advocacy efforts.

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MEDEXUS PHARMA

From Hemophilia to Cancer: A Mother's Journey of Strength, Resilience, and Advocacy

BY SHELLY FISHER AND DONNA KIM

"Have you ever heard of hemophilia?" Theresa Mitchell couldn't believe her ears when she heard those words as a young mother. With a toddler in her arms, a large knot on his head from trying to learn to walk, and pronounced swelling in his arm from a day of blood draws and testing, she demanded some answers.

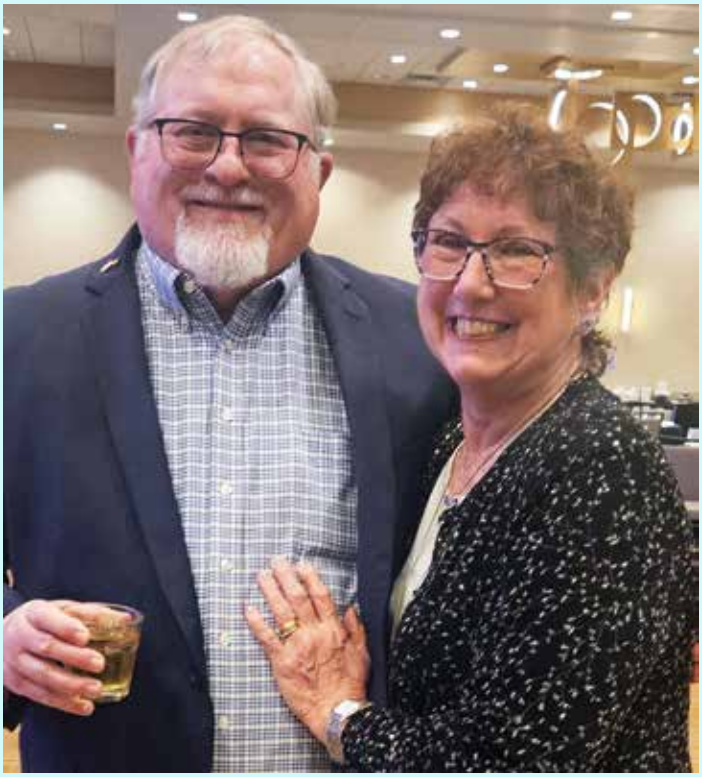
"I remembered studying the Russian Czars in school, but that's all I knew about it [hemophilia]." After six weeks of being told that her son "bruised easily" and "showed injury more easily because he was a redhead," a pediatric doctor delivered the news that he suspected her son had hemophilia, and he wanted to do more testing. She described the next few days as "some of the longest of her life."

Theresa was sent to Children's Memorial Hospital in Chicago, where her son was diagnosed with hemophilia B. She was also told that had she waited any longer, the swelling in his arm would have caused major tissue damage. With no known history of hemophilia in her family, she was surprised to learn that she was most likely a carrier by default and got involved with a study at the Mayo Clinic on the F9 gene. "They tested my family and after a year, they traced the markers through me and my dad."

"We couldn't find a foundation at first, but we did get in touch with one in Chicago. As the mom of a son who was diagnosed at the height of the AIDS epidemic, I was taught about hepatitis and HIV. At that time, Factor IX didn't have very many products and I think we had two choices."

Theresa infused her son on demand, but if she couldn't see his pediatrician, they had to head to the ER, where the staff had a hard time mixing the treatment. By the time he was 5 or 6, Theresa and her husband had learned how to mix the infusion. How do you infuse a young child who tries to hide their "bubbling leg?" "We used humor. Stuffed animals would get treated with fake 'Factor,' and eventually, he learned to mix it himself. At 9, he did it on his own at camp and was doing it consistently by sixth grade."

Recently, Theresa's diagnosis changed from symptomatic carrier to mild hemophilia. Theresa's journey took another drastic turn last Halloween when she was diagnosed with breast cancer. She emphasized



the importance of having a medical plan in place before it's needed, particularly when dealing with multiple health conditions.

Her collaboration with her hematologist and cancer care team was crucial in managing both hemophilia and cancer. Having a detailed plan and access to factor supplies made a significant difference. While her hematologist put the plan into place immediately, obtaining the factor required extensive coordination between her home healthcare company and the hospital.

Theresa's experience with the biopsy highlighted the challenges of being treated in a non-hemophilia treatment center. The center did not carry factor supplies, so the procedure was done inpatient. She ended up with a bigger bruise from the biopsy because they did not initially think she needed factor, a decision she later regretted.

She detailed how her breast cancer treatment was delayed due to the complexities of managing hemophilia. Normally, a diagnosis, biopsy, and surgery happen within ten days, but for her, it took two months. Despite the challenges, she praised the cancer care team for their support and quick responses to her concerns. The team immediately involved the hematologist in creating a protocol for her hemophilia, and having knowledgeable people to consult with provided significant relief.

Theresa shared the impact of her surgery and treatment on her daily life. She had the surgery right before Christmas and had to stay overnight to monitor her factor levels. Following surgery, she underwent radiation therapy, requiring about 15 or 16 sessions, but the radiation caused lymphedema, which she had been dealing with since Mother's Day. Her positive attitude helped her manage these side effects and stay focused on recovery.

Throughout her cancer journey, Theresa found strength in her past experiences with hemophilia. During her annual hemophilia clinic visit in June, which typically involves multiple specialists, including social workers, physical therapists, and doctors, Theresa was asked by her social worker how she handled the cancer diagnosis. Reflecting on her experiences, Theresa realized that dealing with hemophilia for so long had prepared her well for the challenges of cancer treatment. For her, it was like another day in the park.

Theresa advises that in an ideal world, individuals with hemophilia should have two crucial components in place: a supply of factor medication at home and a written treatment protocol from a hematologist, including the necessary supplies to administer the medication. She emphasizes the importance of being prepared for emergencies, where immediate access to factor can be lifesaving. Theresa also highlights the misconception that hemophilia is solely a male disease, noting that many women also have hemophilia and require similar preparedness.

During her annual hemophilia clinic visit in June, which typically involves multiple specialists, including social workers, physical therapists, and doctors, Theresa was reminded again of the importance of having a plan in place. She reflected that dealing with hemophilia for so long had prepared her well for the challenges of cancer treatment, and she emphasized that having a factor at home and a detailed protocol from her hematologist made a significant difference in managing her health.

When asked what advice she would give to parents of a newly diagnosed child with hemophilia, she didn't hesitate and shared the same advice she was given over 30 years ago. "Go on a date and don't talk about hemophilia; learn as much as you can about it, share with others and help as an advocate, and bring in humor whenever possible." Her wisdom didn't stop there as she discussed parenting a child with hemophilia as they become an adult and manage their treatment, insurance, doctors, etc., on their own. "Let go and let them grow, and keep the conversation open is the best advice I can give anyone."

Theresa took her advice seriously and started a Parent to Parent group through the Hemophilia Foundation of Illinois. She sponsored events on holidays to pass out goodie bags and provided time for parents to hang out with each other while kids of the same age group and their siblings could play in a safe place. The event was a huge success. "It created a lot of friendships and support for younger parents."

Theresa was so excited when she discovered The Coalition for Hemophilia B, and she enjoys imparting knowledge and experience to the new generation of moms and dads. "I tell them, hey, it's going to be okay." She doesn't forget the humor component, either. "I tell the grandparents, if something happens on your watch, just put a bag of peas on it and buy mom and dad a new bag of peas next week."

Despite these challenges, Theresa remains active in her community. She continues to support and educate new parents, emphasizing the importance of being prepared and having access to necessary medical supplies at home. She also advises that having a factor at home and a written protocol from the hematologist are imperative. "Learn as much as you can from reliable sources, not just the internet. Talk to your hematologist, nurses, and other families dealing with hemophilia, be aware of the condition, and know how to treat it."

Theresa remembers those first dates without discussing hemophilia as challenging for her and her husband, but now, with their son grown, they continue to take "staycations" once a month. Just recently, she surprised her husband with a trip to a military museum in Zion, Illinois, and they visited a Japanese garden, some museums, and an antique car show in Rockford.

When she's not "staycationing" with her husband, Theresa loves to crochet in the fall and garden from April to the first frost. Purple irises are her favorite bloom. "The garden is my zen."

After retiring from a career in sales, she also works the membership desk at the local YMCA part-time. Theresa's proactive approach and positive attitude extend to her mental health. She enjoys swimming, walking, and participating in water exercise classes at the YMCA. "Exercise and staying active are vital for my well-being," she says.

Continuing to learn all she can, she's incredibly excited about gene therapy. Insurance companies and access to Factor IX continue to be challenges for her, but she said, "I always look at it as a learning experience. It's interesting. I have advocated for my son all my life and am now advocating for myself."

STRENGTH IN CONNECTION: 50+

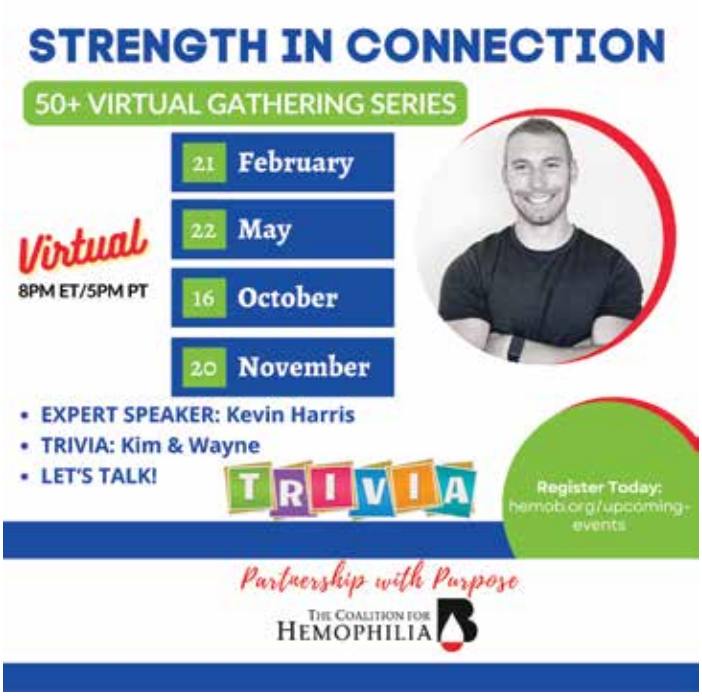
BY: MARTA THOMAS

In the spirit of fostering vitality and unity, the hemophilia B community recently hosted an inspiring event, leaving attendees revitalized and more connected. Co-hosted by Wayne Cook and Kim Phelan, this gathering wasn't just an ordinary meeting – it was a testament to the strength and resilience that characterizes living with hemophilia B, especially as one ages.

The evening's program on February 21, 2024, was thoughtfully curated to balance physical well-being with mental stimulation and social interaction. The highlight was the session led by Kevin Harris, a beacon in the health and wellness sector with nearly a decade of experience.

Kevin shared his comprehensive knowledge with a room full of eager learners. His session wasn't merely about going through the motions of exercise; it was an educational experience that integrated movement, eating habits, and the importance of mental health into a holistic approach to well-being.

Kevin's mantra of choosing 'movement over exercise' speaks to the core of finding a personal connection with one's physical activities. He encouraged attendees to shift their focus from structured exercise routines to the simple act of moving their bodies in ways that bring joy and vitality. By advocating for movement integrated into the fabric of daily life, Kevin illuminated the path toward a lifestyle that celebrates mobility in all its forms, from the simplicity of a morning stretch to the rhythm of a dance.



With a focus on practicality, Kevin demonstrated stretches and exercises that were both accessible and beneficial for individuals in their golden years. These movements were more than physical routines; they symbolized the flexibility and adaptability needed in life, especially when dealing with a condition like hemophilia B. Complementing this philosophy, Kevin urged the community to think in terms of 'eating habits over diet,' a phrase that encapsulates the essence of sustainable and mindful nourishment.

This perspective distances itself from the fleeting trends and restrictions that often accompany the concept of dieting. Instead, it nurtures a relationship with food that is based on consistent, healthful practices that nourish the body and soul over a lifetime.

Beyond the physical aspects of health, Kevin addressed the crucial element of a positive mindset. His belief that one is never too old to move or to make positive changes redefines the narrative around aging and health. He instilled a message of continuous personal growth and the power of incremental, positive behavior change.

Kevin's focus on mindset extended to the importance of behavior change. Rather than overwhelming changes, he encouraged small, daily actions that accumulate into significant transformations over time. Reminding us that positive change is always within reach, even in the golden years.

Equally memorable was the segment hosted by Rocky Williams, who delivered a slew of games that sparked waves of nostalgia. It was an ingenious way to engage

the mind, evoke cherished memories, and encourage lively interaction. The games weren't just a nod to the past; they served as a bridge, connecting participants through shared experiences and the joy of rediscovery.

As the event transitioned from structured sessions to the informal, it became apparent that the sense of camaraderie was the true essence of the night. Conversations flowed, experiences were exchanged, and the bonds within the community were visibly strengthened. It was a reminder that although hemophilia B comes with its challenges, the support and understanding within the community offer a foundation of incredible strength.

The event illustrated that aging with hemophilia B is not a journey one has to undertake alone. There's a vibrant community ready to offer support, share in the triumphs, and provide a listening ear during tougher times. Attendees left the event not just with a sense of physical invigoration but with the comfort of knowing that they are part of a close-knit community, rich in shared experiences and unwavering support.
As we reflect on the success of the event, it's clear that the combination of expert-led fitness advice, mentally engaging activities, and the warm, social environment crafted an unforgettable experience. It was an affirmation that within the hemophilia B community lies an unshakeable force, forged through shared challenges and triumphs, that will continue to thrive with each such gathering.

In essence, the gathering was a microcosm of the broader hemophilia B community, a space where age is not a barrier but a milestone of life's journey, and where well-being is a tapestry woven through daily habits, positive thinking, and the simple, profound joy of movement.

Comments:

- "So much fun to see everyone, learn, and laugh!"
- "Learned new exercises that I will put into practice."
- "Motivated to stretch."
- "The experience shared by the participants around the meeting theme have encouraged me in thinking through solutions that might work for me."

Y.E.T.I.

BY KATIE COLÓN

February 22-25, 2024, Rocky and I attended the *Youth Effectively Transitioning to Independence (Y.E.T.I.)* conference hosted by the Pacific Northwest Bleeding Disorders and facilitated by GutMonkey in Portland, Oregon. Y.E.T.I. is one of the premier programs for bleeding disorders in the United States. Through an immersive train-the-trainer weekend event designed for adults who support youth with bleeding disorders, the conference focused on creating high-quality, engaging teen programming that emphasizes shared decision-making and health management.

We learned from experts and peers techniques to help us support the development of strong collaborative relationships to work to address the unique challenges faced by teens with bleeding disorders as they transition to adulthood. Through interactive activities, like the bleeding disorders timeline game, a high ropes course, and a hike to a waterfall led by the teens, Y.E.T.I. encouraged teens to get out of their comfort zones and become leaders, and adults to take notes! This conference has equipped them and the with the tools and inspiration to take charge of teen programming and support their peers in the hemophilia B community.

READY FOR ANYTHING

BY ALYSHA MCCABE

Community members came together virtually on February 28th and March 28th for the first two sessions of our *Ready for Anything: Emergency Preparedness* series. These sessions focused on safeguarding our health in times of uncertainty and preparing for the unexpected. Participants left enlightened on how the emergency systems work and how they can better prepare for a plethora of situations that may arise.

Our expert speaker was William Patsakos, PharmD; a clinical pharmacist with CVS Specialty who serves as a Client Relations Executive in their hemophilia division. He began by leading the group through various case scenarios that could disrupt the lives of medical patients and loved ones. William detailed real-world scenarios and shared techniques and resources for navigating challenges like pandemics, food shortages, natural disasters, and a wide range of disruptions to daily life. He emphasized that emergency preparation is essential for our community to safeguard our health and well-being. Many of us are overly reliant on infrastructure and technology, leaving us unprepared for potential disruptions.

William guided participants on how to establish contingency and emergency plans for family members across different states. He made clear the importance of thinking ahead and creating a contingency plan, packing a to-go bag, and staying informed and aware of local resources. He demonstrated that while there are systems and resources in place across the country, it could take time to gain access to those resources. Especially if someone needs medical support it is important to think about what resources will be available and make a plan. Members can check the CHB educational hub for resources such as checklists to help prepare, tips on what to do in emergency situations, and links to different agencies that offer support during an emergency or information about an area.

The overarching theme of the presentation was to do your part, be prepared, be informed, and follow instructions. Have an evacuation plan and lay the foundations now for community support and mutual aid during times of uncertainty. Patsakos did a terrific job of detailing types of emergencies and disruptions and providing members with the tools to be prepared in those situations.

Participants wrapped up the session by providing feedback on the event and engaging in a closing raffle.

Many of our members shared how important this information is and are ready to take action to help prepare for any possible disruptions in life and our healthcare networks. Several members stated that they will look deeper into things such as to–go bags and will work with their families to stay informed and develop a plan.

William returned for the third session during the symposium where he provided an insightful discussion on building community resilience and mutual aid on the journey towards emergency preparedness. You will discover how collective action and preparedness can pave the way for a safer and more secure future. Thank you to CVS and William Patsakos for allowing this group to come together and turn challenges into opportunities as well as foster a culture of readiness in our community.

CVS specialty™

Comments:

- "This was the wake-up call I needed. So much to do!"
- "I'll take a few things I learned and go over with the family!"
- "Thank you so much Bill and CHB for this informative, educational session!"
- "Very helpful and thought-provoking."

FORO LATINO DE HEMOFILIA B

By: Laura Echandi

The 18th Annual Coalition for Hemophilia B Symposium was held April 25-28, 2024, at the Renaissance Dallas Hotel in Dallas, Texas. We were pleased to welcome our newest group, the ***Latino Forum of Hemophilia B***, which included an active Latino community from different regions of the United States and Puerto Rico! It was very educational, fun, and interactive!

Fernando Reyes led the session *Mind and Body Together* discovering the fundamentals of mental well-being where we learned about the importance of sleeping well for the improvement of the immune system and the detoxification of the brain.

Laura and Fel Echandi led a session on *Our Marriage as Parents of a Person with Hemophilia*, traveling through their experience, problems, and solutions to the challenges of a blood disorder, as a couple.

Aura Bermudez, a licensed psychologist, nationally certified Ayurveda health counselor and yoga practitioner, Aura showed us the three key principles for good health including the qualities of our rest, eating habits, and simple and sustainable daily routines. She provided us with a downloadable guide for our support.

We hope that our next sessions will be topics of interest to our community!

We will continue to explore psychological, physical, and economic challenges, and provide education on how to navigate the health system through advocacy.

HER CARE, HER CHOICE: WOMEN AND HEMOPHILIA B EVENT RECAP

BY ALYSHA MCCABE

Members came together on May 9th, 2024, for another fantastic part of the *Her Care, Her Choice* virtual event series. This informative and empowering evening centered around "Genetics of hemophilia: Implications for diagnosis in females and reproductive planning."

Dr. Johnsen delved into the complexities of hemophilia B genetics from a clinical perspective by exploring how a diagnosis is approached, what care is given, as well as the clinical terms being used and what implications those terms can have. She shared that genetic testing should be done for everyone who is at risk. It can inform diagnosis, reproductive planning, pregnancy and neonatal management, risk of inhibitor formation, predicted disease severity, and provide a basic understanding of mechanisms of disease.

Thank you to Medexus for allowing members to connect with Dr. Jill Johnsen and gain a better understanding of the implications of genetics and hemophilia B. CHB appreciates your support in bringing education and opportunities for growth to women in the community.

MEDEXUS PHARMA

Comments:

- "Great information was shared. Thank you for bringing in great speakers who are willing to share their knowledge with us."
- "I was encouraged to listen to others' questions and learned more about how to care for myself."
- "Dr. Jill was so helpful in answering our questions and I always love our time with Gha'il! I feel so connected and empowered tonight."

STRENGTH IN CONNECTION: MANAGING OSTEOARTHRITIS

BY: MARTA THOMAS

In a continued effort to support and empower individuals in our community we brought together participants on May 22nd for an evening of learning, movement, and camaraderie. The highlight of the *Strength in Connnection* event was a session led by Makenzie Sledd, MPT, a distinguished physical therapist from St. Louis Children's Hospital. With over 15 years of experience, Makenzie has dedicated her career to enhancing the quality of life for both pediatric and adult patients, particularly those with bleeding disorders.

Makenzie's presentation was an enlightening experience for attendees. She began by shifting the focus from traditional exercise routines to the concept of infusing daily activities with movement. Her philosophy encourages individuals to integrate physical activity seamlessly into their daily lives, making it a natural and enjoyable part of their routine.

To cap off the evening, we indulged in some fun trivia, paying homage to old movies, shows, and commercials. This nostalgic segment not only entertained but also sparked lively conversations and laughter, making it a delightful way to end the night.

We give Sanofi a giant thank you for making this night possible by sponsoring this event!

sanofi

Comments:

- "Excellent presentation, helpful tips with great friends!"
- "I learned some gentle stretches that I can use daily which I can modify to meet my specific needs and abilities."
- "I enjoyed seeing everyone in the community and learning new things to help me with my physical health."

HER CARE, HER CHOICE

BY: MARTA THOMAS AND ALYSHA MCCABE

The virtual ***Her Care, Her Choice*** series, dedicated to women's empowerment and education, continued with two impactful sessions held on June 12th and August 1st. These sessions provided valuable insights and tools for navigating healthcare challenges with confidence.

On June 12th, Shellye Horowitz led a session on *Partnering with Providers for Care: Sharing Your Patient Story*. Shellye is also deeply connected to the bleeding disorders community with six generations of hemophilia A in her family.

On August 1st, Makenzie Sledd, MPT, led a session on *Joint Health for Women*. A physical therapist at St. Louis Children's Hospital, Makenzie has expanded her practice to include adults and children with bleeding disorders.

We would like to extend our heartfelt thanks to our sponsor, Sanofi, whose generous support made these events possible.

COMMENTS:

June 12th:

- "Thank you for these events. It's nice to stay connected and learn."
- "Thank you for having this space for us women. We appreciate it."
- "Loved hearing from Shellye! Her encouragement to document everything is what I needed!"

August 1st:

- "Love the connection with my hemo-B ladies. Uplifting and inspiring!"
- "The PT angle about 'just move' is very powerful."
- "This was a great reminder to check in with myself."
- "Thank you! I was reminded to make a list to take to my PT appointment next month."

TEXAS BLEEDING DISORDERS CONFERENCE

BY ROCKY WILLIAMS

Fel, Jibin, and I had an amazing time representing CHB and exhibiting at this year's Texas Bleeding Disorders Conference! Held from June 21st to the 23rd in Austin, Texas, the event featured a fun "Sweet Sixteen" theme.

The event was such an incredible gathering filled with community spirit and educational opportunities! It was wonderful to connect with so many of our hemo B families from all across Texas.

A huge thank you to the Lone Star Chapter and the Texas Central Bleeding Disorders for organizing such a fantastic event!

GENE THERAPY SUPPORT NETWORK

BY: MARTA THOMAS

Are you interested in learning more about Gene Therapy?

Several recent Gene Therapy Support Network Events hosted on Zoom allowed qualified individuals exploring or undergoing gene therapy for hemophilia B to engage in candid discussions and share experiences. These sessions ran from June through August. We are very excited about these events. The feedback has been overwhelmingly positive.

Sessions were hosted by either Brian O'Mahony, CEO of the Irish Haemophilia Society, or Robert (Bobby) Wiseman, both of whom have undergone gene therapy. These sessions offered both guidance and emotional support.

O'Mahony's personal experience with gene therapy and advocacy expertise reassured participants, while Wiseman's background in community-based social services emphasized the importance of emotional preparedness and building a support network.

Participants discussed various topics, including family planning, the need for mental preparation, and potential challenges related to employment and travel. Many expressed a desire to hear both the positives—such as fewer bleeding episodes and less reliance on infusions—and the negatives, including extensive monitoring and the uncertainty of future treatments.

The discussions are honest, heartfelt, and deeply impactful. They provide participants with the necessary information and the emotional and peer support crucial for making these life-changing decisions.

The events foster a sense of community, allowing participants to discuss their questions openly in a supportive environment. Overall, the Gene Therapy Support Network Event offers valuable information and a crucial peer network, helping attendees confidently navigate the complexities of gene therapy.

Thank you to CSL Behring and Pfizer for their sponsorship. Stay tuned for future Gene Therapy Network Support Events!

CSL Behring

Pfizer

Brian O'Mahony

Bobby Wiseman

PARENTING SUPPORT: NEWBORN TO EMPTY NEST

BY: MARTA THOMAS

The July 24th *Parenting Support: Newborn to Empty Nest* session was a remarkable gathering of parents and caregivers, hosted by the wonderful Cassandra Starks who set the tone for the evening with engaging icebreakers, helping everyone feel comfortable and ready to participate.

The session featured a transformative workshop led by Corazon Tierra, an experienced dance educator and somatic movement specialist. Corazon's session focused on how movement and dance can help families manage stress and emotions in a fun and accessible way. With over 20 years of experience, Corazon has dedicated her career to helping people of all ages use movement to feel better, both physically and emotionally. Her approach is all about making sure everyone - adults and families - feels safe and confident while expressing themselves through dance. As the creator of EduDanza, Corazon teaches dance and movement in a way that is welcoming and easy, regardless of experience level.

Corazon introduced the concept of somatic movement, explaining that somatic movement is about connecting the mind and body through simple movements that help people become more aware of how they feel. This isn't just about exercise; it's about using physical movement to calm the mind, release stress, and help people feel more balanced. Research has shown that when people are more aware of their bodies and how they move, they can better manage their emotions and reduce stress.

Corazon guided participants through a series of gentle movements and dance exercises. These activities were designed to be fun and inclusive, even if they had never danced before. The focus was on moving in a way that felt good and natural without any pressure to perform. This approach allowed participants to relax and enjoy the experience, finding joy in the simple act of moving together.

One of the key points Corazon emphasized was that these movements could be used as tools to help regulate emotions. For example, when someone feels stressed or overwhelmed, they can use the techniques to calm down and feel more centered. The exercises were not only effective but also enjoyable, making it easier for participants to incorporate them into their daily routines.

As the session went on, it became clear the simple act of moving together helped to create a strong sense of connection among the participants. The atmosphere was relaxed and supportive, making it easy to feel comfortable and open to the experience.

By the end of the workshop, many participants expressed how much they appreciated learning these new ways to manage stress and emotions. Corazon encouraged everyone to continue practicing these movements at home, reminding them that taking just a few minutes each day to move mindfully can make a big difference in how they feel. The goal was to help participants build a set of tools they could rely on whenever they needed to find a little more balance in their lives.

The session concluded with a heartfelt conversation where parents shared tips and advice they would give to their younger selves and to new parents. Some of the wisdom shared included: "Everything is a practice, and you learn each and every time you do it. How amazing it will be when you look back and see how strong you are and you made it through, with patience, grace, and being open to support." Another parent reminded everyone, "There are people to help," while others emphasized, "Make sure you take care of yourself too," and "It's ok to fire professionals. You know your body better than anyone and if they are not treating your needs, you have every right to seek alternative advice."

This session was a wonderful example of how movement and dance can be used as tools for emotional well-being. Corazon Tierra's approach made these concepts accessible and easy to understand, helping participants discover new ways to connect with each other and navigate the challenges of life with greater confidence and calm. As they continue their parenting journey, the lessons learned will be valuable resources in helping to stay grounded, resilient, and connected.

We extend a heartfelt thank you to our sponsor, Sanofi, and to their representative, Carrie Koenig. Your support made this event possible and helped create a meaningful experience for all who attended.

SEPTEMBER 5TH, 7 PM EASTERN

B-LEADERS

JOIN CONNOR IN AN EXCITING GAME OF BRACKETEERING

MATT BARKDULL WILL LEAD OUR RAP SESSION

TEEN ADVOCACY PROGRAM

REGISTER: HEMOB.ORG-UPCOMING-EVENTS

The Coalition for Hemophilia

Virtual

PARENTING SUPPORT: NEWBORN TO EMPTY NEST

8PM ET/5PM PT

SEPT 18 **NOV 6**

Join us for a CIRCLE OF PARENTS from newborns to empty nesters!

Food Vouchers | Rap session | Raffles and games

Register Today: hemob.org/upcoming-events

Partnership with Purpose

The Coalition for Hemophilia sanofi

MEET and GREET

WITH KIM!

PARENTS/CAREGIVERS OF CHILDREN 0-17 & PARENTS/CAREGIVERS OF ADULT CHILDREN

OCT 1 & OCT 24

8pm ET/ 5pm PT

- Raffles & Games
- Hosted by Kim Phelan
- Build Connections

REGISTER TODAY → hemob.org/upcoming-events

OCT 3

8pm ET/5pm PT

HER CARE, HER CHOICE

Women & Hemophilia B

Raffles!

Food vouchers for first 50 to register!

JON US AS WE AMPLIFY WOMEN'S VOICES IN HEMOPHILIA B CARE!

Let's get together to share strategies for women and girls to articulate their needs and advocate for comprehensive treatment.

Alsc hear from experts and advocacy mentors in this series that equips women with the tools to navigate healthcare challenges confidently within a supportive community.

Cutting-edge Care Research!
Empowering Rap Sessions!

Regster today: hemob.org/upcoming-events

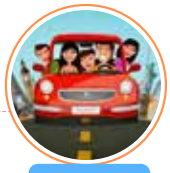
Partnership with Purpose

The Coalition for Hemophilia MEDEXUS PHARMA

MEETINGS ON THE ROAD

REGISTER TODAY:
HEMOB.ORG/UPCOMING-EVENTS

WE ARE TRAVELING NEAR & FAR TO COME SEE YOU!



DISTANCE WILL NEVER BE AN OBSTACLE FOR US TO SEE OUR MEMBERS!

WE CANNOT WAIT TO SEE YOU ALL!

OCTOBER 12: COLUMBUS, OH
OCTOBER 19: DENVER, CO
OCTOBER 26: CHICAGO, IL
NOVEMBER 9: ANAHEIM, CA

FEBRUARY 1: BIRMINGHAM, AL
FEBRUARY 8: RICHMOND, VA
MAY 3: ST. LOUIS, MO
MAY 17: SAN ANTONIO, TX

WE HAVE EXCITING NEW PROGRAMS FOR OUR FAMILY MEETINGS ON THE ROAD

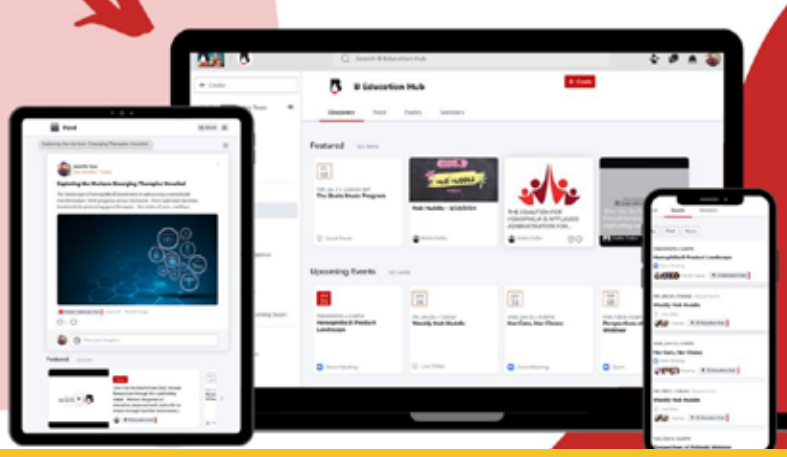
Partnership with Purpose

CSL Behring Biotherapies for Life™ | The Coalition for Hemophilia B

The B Education Hub

Join the B Education Hub, a dynamic and inclusive platform packed with exclusive resources, engaging events, diverse groups, and more, all designed to enrich, support, and facilitate collective growth within our vibrant community.

hemob.org/education



STRENGTH IN CONNECTION

50+ VIRTUAL GATHERING SERIES *Virtual*

16 October

20 November

8PM ET/5PM PT

- EXPERT SPEAKER
- TRIVIA with Kim & Wayne
- LET'S TALK!

TRIVIA

Register Today:
hemob.org/upcoming-events

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The Coalition for Hemophilia B | sanofi

FORO LATINO DE HEMOFILIA B

12 de noviembre

9pm Este/6pm Hora del Pacífico

¡RIFA Y VALES DE COMIDA!

Partnership with Purpose

The Coalition for Hemophilia B

The Coalition for Hemophilia B understands there are families within our bleeding disorder community who feel the effects of the current economic situation. While the Coalition will also contribute to this fund, we ask our more fortunate Factor Nine Families to help us by making a financial donation to the Factor Nine "Holiday Fund" to help buy gifts for children with hemophilia.

To make a donation, visit https://www.hemob.org/donate and select Factor IX Holiday Fund or send a check payable to:

The Coalition for Hemophilia B "Holiday Fund"
757 Third Avenue, 20th Floor; New York, NY 10017

Please respond by **November 18, 2024** so Factor Nine Santa can load his sleigh with holiday gifts for all good girls and boys!

For families in our community in need of a little holiday cheer, we would like to help put something under the tree for your children. Fill out this form and send it to Santa's special elf, Kim, at the "East" Pole. Factor Nine Santa has a busy schedule, so please send this form no later than **November 18, 2024**. Your name and information will be kept strictly confidential.

Mail this form to the address below or scan the QR code to apply.

The Coalition for Hemophilia B Holiday Cheer
757 Third Ave, 20th Floor; New York, NY, 10017

For children up to age 18

Name: _____

Street Address: _____

City, State, Zip code: _____

Phone: _____ Email: _____

Please give an exact description of your child's wish item. Gifts will be purchased and sent to your home.
Please note which child is affected by hemophilia B.

We wish you all a beautiful holiday season filled with love, happiness and good health!

Child's Name and Age:	Child's Name and Age:	Child's Name and Age:
_____	_____	_____
Wish List:	Wish List:	Wish List:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

BCares

THE COALITION FOR HEMOPHILIA B PATIENT ASSISTANCE PROGRAM

> "ONE OF THE MOST IMPORTANT THINGS YOU CAN DO ON THE EARTH IS TO LET PEOPLE KNOW THEY ARE NOT ALONE."
>
> SHANNON L. ALDER

BCares Patient Assistance Program **provides short-term, limited financial aid to our hemophilia B community members who encounter unforeseen emergencies, including COVID-19 related hardships. The charity and compassion of our BCares partners make this critical funding program possible. Thank you for your support.**

The Coalition for Hemophilia B is a national nonprofit serving the hemophilia B community for 30 years.

LEARN MORE hemob.org/bcares

PLEASE DONATE hemob.org/donate

THE COALITION FOR HEMOPHILIA
Email: contact@hemob.org
Phone: 212-520-8272

THE COALITION FOR HEMOPHILIA

757 Third Avenue, 20th Floor; New York, New York 10017
Phone: 212-520-8272 Fax: 212-520-8501 contact@hemob.org

VISIT OUR SOCIAL MEDIA SITES:

Website: www.hemob.org

Facebook: www.facebook.com/HemophiliaB/

Twitter: https://twitter.com/coalitionhemob

Instagram: www.instagram.com/coalitionforhemophiliab

Linkedin: https://www.linkedin.com/company/coalition-for-hemophilia-b/

SCAN ME

For information, contact Kim Phelan, 917-582-9077, kimp@hemob.org

MEET OWEN – YOUR FUTURE HEMATOLOGIST!

BY SHELLY FISHER

Like most 8th graders, Owen is focused on school, extracurricular activities, and spending time with his family and friends. However, this 13-year-old is somewhat unique in that he already knows what career he would like to pursue.

When I asked how school was going, Owen didn't hesitate. "I'm doing pretty good. It's pretty interesting and hard. I'm in honors classes." He shared that his favorite class was "living environments," and that "it's basically biology." Owen further explained, "I like learning about the body and how everything works."

His preference for science is no surprise when he confides that he already knows what he wants to do when he graduates from the New York Medical College. His career of choice? "After meeting my hematologist, I decided that I want to be one too so that I can help kids, or anyone, get through the process after being diagnosed, and make them feel less alone."

In addition to his classes, Owen also told me he plays the alto sax in his school band and has been singing in the bass section of the choir for two years. He said that he's currently learning to play "Jingle Bells," and is looking forward to learning to play some 80s music and jazz in the future.

With high school just around the corner, Owen shared that he is planning to stay in band and hopes that there will be a jazz ensemble as well. He enjoyed performing in concerts with his middle school band but is looking forward to competitions over the next four years.

The future medical student confided that he has "written a few stories" in his free time and likes spending time with family and friends. Last year, he visited cousins in Pennsylvania for Thanksgiving, and that he and his dad frequently participated in his local hemophilia chapter's charity events and "walks." Owen also likes playing Minecraft and Destiny 2 with friends online and is looking forward to taking care of his new Golden Doodle puppy, Bella. When asked how his friends would describe him, he shared they might say he was "silly, funny, creative, nice and someone they can confide in."

With no known history of hemophilia B in his family, eight-year-old Owen and his dad were surprised when "a weird bubble" appeared on his gums after a tooth was removed due to constant pain following a cavity that was drilled. After the dentist asked if Owen had a bleeding disorder, his dad took him to another doctor. By that point, he had already lost a lot of blood and required a blood transfusion before the hospital staff diagnosed him with hemophilia B.

Owen didn't pull any punches when he offered advice for someone who has just been diagnosed. "It's going to take a lot of adjusting. It's going to be terrible a lot of the time and maybe change your life, but eventually, you'll get through it. Eventually, it will all feel normal and amazing because there are a lot of amazing people in the hemophilia community who really help you get through it."

He credits his parents as being especially supportive after his diagnosis. "My dad has really been with me through the whole process of learning about hemophilia, and my mom has really helped keep me safe and makes sure I don't get into any accidents." Owen would also like to mention his soon-to-be stepmom, Claire, for helping him find a community, and a friend named Andy who he met at a hemophilia summer camp. "He inspired me to infuse myself."

When asked what The Coalition for Hemophilia B has meant to his family, Owen shared, "Personally, it has really helped me fit in and feel a bit more comfortable with my condition. For my parents, I think it's also really helped to be able to get some advice from other parents of children with hemophilia. Also, literally everyone in the Coalition is amazing, and it gives me a bit of a good role model/inspiration."

When I asked Owen to name something that he gets excited about happening, he barely hesitated and to no surprise, it had a lot to do with his long-term goals and dreams.

"The thing that keeps me going in life is the fact that one day I will have my own job and my own family. I'll be a hematologist, and I'll have more freedom."

When I pressed him for something that he wanted to happen sooner, he said he hoped his dad was making ramen for dinner.

It's good to have attainable goals, both in the long term and short, and I think soon-to-be Dr. Owen has them both covered!

"DR. HANNAH" IS MAKING WAVES, AND WANTS TO MAKE LIFE BETTER FOR THE HEMOPHILIA COMMUNITY!

BY SHELLY FISHER

Hannah visited with me in the middle of her 6th grade year, one that she felt had encouraged her to be "more independent" and avoid "slacking." She also felt that changing classes made the days go by faster and she was excited to tell me about all of her teachers. "There are some that really matter to me and they have made learning a lot more fun. They're not too strict or not too fun. I like it when they're right in between."

When asked if there was one teacher in particular she wanted to mention, she answered quickly and provided more than one. "Mrs. Hammond because she supported me when I was getting bullied in the 3rd grade, and she made class fun."

Known by her classmates as a "techie," she also listed Mr. Sanchez's class as one of the most interesting because he encouraged her to improve her technology skills and she was trying to learn how to use the 3D printer. "Want to see what I made?" She reappeared with a 3D model of a mushroom printed from the 2D design that she created. Why a mushroom you might ask? "My friend loves mushrooms. I'd like to learn how to make something more complex as well."

Hannah is also grateful to Mr. Scarlet for "supporting her writing journey," and added, "He says I have an imaginative and funny writing style. I'd like to write a story about a girl who has hemophilia one day."

Her imagination is also put to good use in Mr. Brown's wood-working class, where the students can "pretty

much design anything that doesn't require machines." Hannah shared that she was working on a large pair of dice made out of wood because "Mr. Brown makes sure we don't pick anything too extravagant."

In addition to school, Hannah was also perfecting her breaststroke in swim class when an injury to her knees at a dance resulted in an infusion, and a mandatory break from swimming, but she's not letting it stop her for long. With her eye on a place on the middle school swim team, she shared that she likes the breaststroke because "you breathe in it and I'm pretty fast in it."

Hannah's parents always knew that she would have hemophilia B and her ultimate diagnosis at 9 years old led her family to pursue organizations like The Coalition for Hemophilia B (CHB). Her mom credits CHB with helping them to learn about programs and events for kids like Gettin' in the Game and the Meetings on the Road. Inspired by these experiences where she went to parks with bumper cars and race cars, ate great food, went bowling, and attended virtual classes including building gingerbread houses, Hannah learned that she "wasn't the only one with hemophilia B." She has since decided to become a hematologist to help others struggling with the same issues. When asked if there was something specific she was interested in researching, she shared, "It's mainly how it reacts to the body and makes the joints not so good. I want to know what causes that and I want to help." Hannah's mom, Marianne, fully credits CHB for influencing her daughter's new career path.

Crediting her dad with keeping her calm about the hemophilia diagnosis, Hannah shared, "I was really confused and didn't know much about it. My dad helped me realize that I don't need to worry about it unless I get injured."

She also has some advice for anyone newly diagnosed.

"Don't let hemophilia control your life and make sure you seek help if you need it. Don't worry about it too much or ignore it too much."

When asked how she felt her friends might describe her, she felt they might say caring, kind, and funny– attributes that currently make her an amazing 6th-grader, and in the future, a hematologist with a pretty awesome bedside manner as well.

B inspired!

Stories and artwork from teens in the Hemophilia B Community

Summer 2024

IN THIS ISSUE:

"DR. HANNAH"

MEET OWEN!

WANTED: TEEN CONTENT CREATORS!

Calling all content creators! If you have a heart for tweens/teens and a drive for content creation, then we would love for you to volunteer your time and talents with us. The Coalition for Hemophilia B is currently accepting volunteers to collaborate on a new section of the newsletter just for those special 11–18 year olds in our community.

No experience required as we have a team ready to polish your brilliant ideas for publication. If you have ideas for topics, events, and new sections, let's work on this together – reach out to rockyw@hemob.org for your next steps!