PEN

Parent Empowerment Newsletter

LA Kelley Communications, Inc.

inside

THE IMPOSSIBLE

Laurie Kelley

Brian of Zimbabwe: 75% of the world's population with hemophilia is without treatment

Of the estimated 400,000 people with hemophilia worldwide, about 75% have little or no access to factor concentrate. Most live in poverty and suffer daily; children die every month. What would it take to make a historic, permanent impact on treatment to improve lives, to save lives? Bioverativ (formerly Biogen Hemophilia) provided the answer: an unprecedented donation of 1 billion international units (IU) of factor over ten years to the global hemophilia community. How did this seemingly impossible, extraordinary corporate donation happen?

My eyes were opened to the passion of hemophilia during my first professional visit to a developing country, the Dominican Republic, in 1998. I saw an 11-year-old boy with hemophilia whose foot was twisted completely backward, whose father carried him dangling on his back because they had no crutches—or factor. Then in Karachi, Pakistan, in 1999, I realized with horror how many children with hemophilia in a sweltering hospital ward would not get factor that day. As in most developing countries, the government did not buy factor, and patients weren't organized enough to lobby for it. I visited both countries to assess the situation and help patients organize and advocate. Other trips to Guatemala, Nicaragua, Belize, India, Zimbabwe, and Nepal followed. I witnessed deformities, tears of pain, mothers burdened by poverty, and children's endless nightmares.

How could anyone help these families develop hemophilia care in their countries without factor? I formed Project SHARE in 1998, to collect factor in the United States to ship overseas. The World Federation of Hemophilia (WFH) had formed its Humanitarian Aid Program two years earlier.[1] Both of our programs subsisted only on table scraps of donated factor, even if those scraps saved lives.

Then in 1999, I read a story about the pharmaceutical company Merck. Thanks to the extraordinary vision and

» page 6

1. For over 50 years, WFH has worked to improve the lives of people with hemophilia and other inherited bleeding disorders. Established in 1963, WFH is an international nonprofit organization that acts as a global network of patient organizations in 134 countries. WFH has official recognition from the WHO. See www.wfh.org.

welcome

I've been traveling the world since 1998, when I made my first visit to a developing country hoping to motivate patients to form a hemophilia nonprofit organization. But it's hard to train and inspire patients when they're hungry—starved—for factor. I saw firsthand the devastation, deformity, suffering, and death caused by hemophilia and so rarely seen in the US. If only we could get substantial donations of factor!

Laurie with young hemophilia patient in Brazil, 2003

I eventually visited 30 countries, bringing suitcases full of factor whenever I could. I was detained once in Pakistan, and it was harder after 9/11 to travel like that. But a miracle happened in 2012, when I heard that Biogen would donate 1 billion IU to World Federation of Hemophilia's Humanitarian Aid Program. Do you know how much that's *worth*? As a business person, I wondered: How did they manage this? It was astounding. I could think of only one other such donation in the history of medicine—Merck's donation of Mectazin to cure river blindness in West Africa.

I interviewed the many players involved: the CEOs of Bioverativ (formerly Biogen Hemophilia) and Sobi, and staff at the WFH. I asked why the Bioverativ donation wasn't promoted more. All the players were very humble about their roles in the donation. Everyone gave credit to everyone else I interviewed. I was convinced that globally, our community knew of Bioverativ's donation, but here in the US, it was overshadowed by more immediate domestic concerns—healthcare coverage, access to treatment, and a cantankerous election campaign.

The time has come to tell this fascinating story, and I've decided to do it as a narrative: the donation's origins and development, and the incredibly visionary, compassionate, humble executives who made it happen. Be inspired, and be involved.

inbox

"Gene Therapy," May 2017

THE GENE THERAPY article was fantastic. Well researched, well written, and the kind of information the community really needs. There is a tremendous amount of education that needs to happen around gene therapy, and this was a valuable contribution to that effort.

Daniel Leonard
Director of Patient Advocacy
uniQure

A GREAT ARTICLE. Very informative; gives a good overview of everything going on regarding gene therapy. Some parts were a bit technical, but this is to be expected. I liked especially the questions at the end. It's good to know what still remains unanswered. Thank you!

Marelle Hart
LUXEMBOURG

» page 19

PARENT EMPOWERMENT NEWSLETTER | AUGUST 2017

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Leemar Yarde

For the Younger Ones, Things Can Change

I have hemophilia B with an inhibitor, and I live on the tropical island of Barbados. I am one of six people with hemophilia in my family, but I'm the only one with an inhibitor—in fact, the only one on the island with one. So I often meet new challenges. Growing up in a family with two older, experienced relatives with hemophilia has its benefits, but I should tell you a bit more about this lovely island, to help you grasp our situation.

Barbados is a developing country. The medical care here is free, and that is commendable, because many people can't afford medical care. However, the downside is that due to the cost of some medicine, the government can only afford either generic or very limited supplies. Budgets are often allocated to life-threatening illnesses, and the government doesn't view hemophilia as one. As a result, very limited amounts of clotting factor are imported for both types of hemophilia, and none for inhibitors.

Barbados doesn't have a hemophilia treatment center (HTC) or even a medical facility dedicated solely to hemophilia. What we do have is a hematology center that caters to various blood disorders. That center has a handful of experienced hematologists; one or two have dealt with inhibitors in different countries. Sadly, a hematologist can only work with the tools available. I remember having to wait from 8 am until 12 pm to see the doctor, then being told that the hospital had no factor at that time. Still, here in Barbados, we're fortunate because some of our neighboring Caribbean islands can't afford any clotting factor.

So for me, at one point all hope seemed lost...until I met "her."

My inhibitors surfaced when I was in my early 20s and at a difficult period in my life. In my late teens, I began suffering from frequent right knee bleeds. In time, it became clear that knee replacement surgery was inevitable. But why wasn't the factor bringing some relief? Maybe we just needed to infuse more at a single time. So I saw an orthopedic surgeon, who recommended getting tested for inhibitors. Barbados doesn't have the ability to conduct such a test, so blood samples had to be sent to the US for testing. About a month later, the results came back: there was an inhibitor. So the knee replacement was put on hold: my family couldn't afford the amount of factor needed to attempt to tolerize, plus the high cost of using bypassing agents.

As a result, I went a year without treatment. During that time, I was using crutches and putting all my weight on the other good knee, so I lost the use of that knee as well. Using crutches also damaged my right shoulder. My family and I reached out to various organizations worldwide, often being turned down. My hematologist, trying her best and with the limited resources allotted to her, managed to procure a sample donation of FEIBA from Central America.

Remember the "her" I mentioned? She was Laurie Kelley. Coming to Barbados in response to a request from a mother of a child with hemophilia (unrelated to me), Laurie and her wonderful assistant Zoraida wanted to meet most, if not all, the people with hemophilia on the island. That's when we met, and Laurie offered to help me in my times of need. Ever since then, Project SHARE has supplied NovoSeven and FEIBA when possible. Words cannot express how grateful my family, my hematologist, and I are for this constant support.

Sadly, though, I have lost my ability to walk, and I am dependent on family and a wheelchair for mobility. It has cost me a certain quality of life, and the dreams I had growing up. Adding to these difficulties, Barbados does not cater to physically challenged people. Society here still tends to look down on the disabled, but you eventually learn to live with it. I try to find some joy despite the hardship, and fortunately for me, I come from a very large family with no shortage of love and care. My parents work to make my life as comfortable and pain-free as possible, and for that I am eternally grateful.

So for us here in Barbados, rationing factor is a norm. Often we forgo dipping into our supply at home, because the hospital is out of factor and doesn't know when it will acquire more. This means that if a bleed isn't too bad (on a scale of 1–10, below a 7), we will endure pain and suffering, at the cost of a little joint damage, for the sake of not being

» page 17

Cazandra Campos-MacDonald

Being Part of the Team

Some of the most enjoyable times in my life were the months I spent playing softball in a summer league in Galena Park, Texas. The smell of my worn leather glove, the dirt from a great slide into home, and the team that played together with one goal in mind: to win the trophy at the end of the season. It took each of us to make our team function. Not just one person, but all of us together.

When living with an inhibitor, not only do you need a team to help determine the best treatment possible, but you also need to become a *part* of the team. Your firsthand knowledge of living with an inhibitor 24/7 is paramount in finding the right treatment, because you are the expert on your own story. When clinicians and families work as a team to determine the best approach to care, attention is given to the uniqueness of the inhibitor, and to understanding the patient and social environment. Then, the best comprehensive plan for treatment can be achieved.

The hemophilia treatment center (HTC) model provides a comprehensive approach to care that handles various aspects of a patient's overall well-being. About 70% of people with hemophilia in the US receive multidisciplinary, comprehensive care in a network of federally funded HTCs.[1] The HTC team consists of nurses, social workers, physical therapists, and other healthcare providers who specialize in treating people with bleeding disorders. This team not only manages the day-to-day care of an individual, but works to prevent and reduce complications.

Sometimes inhibitors challenge even the providers' expertise and threaten the team approach. My youngest son, Caeleb, has had a tough journey living with an inhibitor. He endured bleeds that seemed never to heal, and the joint damage to his knee and ankle were significant. Treatment with bypassing products proved difficult, and he developed an allergic reaction to infused factor VIII, in addition to his persistent high-titer inhibitor.

At the same time, our HTC was in a transitional stage with staff changes. I felt that we needed a meeting to discuss Caeleb's treatment. So my husband and I met with the interim lead hematologist and asked if he thought we needed help from an HTC in a neighboring state. The wave of relief that washed over him was obvious, and we began a new chapter in Caeleb's inhibitor journey. We began a new relationship with the HTC in Colorado. It wasn't easy at first, because we were inviting a new member to join our team—to join our family.

With regular blood draws and often daily infusions, life with an inhibitor can be demanding. "When inhibitors occur, the families of the hemophilia patient are challenged by uncertainty, unanticipated complications, costs, and difficulties that few people understand," says Dr. Stuart Winter, professor and vice chair of pediatric research, University of New Mexico Health Sciences Center. Not only was my family dealing with the enormity of the bleeds and pain that persisted for Caeleb, but we also had to plan for regular trips out of state for treatment. At one point, we were referred to a special allergist in Colorado; this required us to stay in Denver for a week, and put a financial and emotional strain on our family. But the result was worth it.

An inhibitor heightens the stress endured by many living with hemophilia without this added complication. Dr. Shirley Abraham, director of the Ted R. Montoya Hemophilia Treatment Center in Albuquerque, New Mexico, states that "inhibitor families deal with several unusual and severe bleeds which require specific management. They deal with emotional issues such as the anxiety of having the inhibitor and not knowing what will work for them and for how long." My husband and I had to figure out how to get both of our HTCs to communicate. They agreed to work together, but in the middle of a crisis, reminding one HTC to contact the other wasn't always easy. We had to advocate for Caeleb, and this became uncomfortable. The truth is that when your child is suffering, you do whatever you can to improve the

» page 17

1. https://www.cdc.gov/ncbddd/hemophilia/data.html

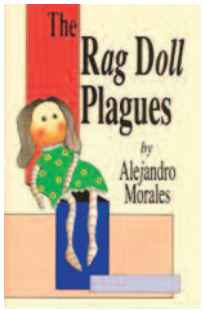
richard's review

Linda Weaver's Studio

Richard J. Atwood

Going Abroad While Staying at Home

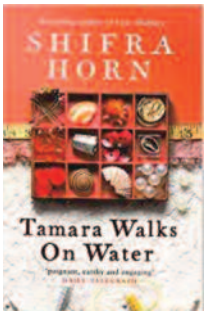
Some of us are lucky enough to travel or live abroad. Others, like me, vicariously satisfy our curiosity about other cultures by immersing ourselves in foreign novels and movies. For your entertainment, I recommend the following examples of interesting fictional characters with bleeding disorders from other countries.



The Rag Doll Plagues
Alejandro Morales
Arte Publico Press, 1992

This novel is a collection of three separate but linked novellas dealing with blood-borne plagues. The stories span from 1788 in the colonial City of Mexico, to 1976 in Los Angeles, and finally to 2075 near San Diego. There is no treatment in colonial Mexico for the pox called *La Mona*, which causes corpses to act like rag dolls. In 1970s Orange County, a Jewish actress named Sandra Spear is married to a Chicano physician. Sandra has hemophilia and aplastic anemia before she acquires AIDS from contaminated blood transfusions. In the future, the "Blue Buster" plague of 2075 forces blood vessels to bust, causing the victim to drown from blood in the lungs; the only treatment is to bleed the patient and transfuse genetically antidotal Mexican blood.

Separated by time and space, the three novellas are also linked by the themes of blood-borne diseases; healing by physicians and *curanderos*, or folk healers; and the concept of *tocayo*, or characters with the same first name. Besides her medical problems, Sandra Spear experiences discrimination in her workplace due to her hemophilia. The threat of blood-borne diseases, which remains a constant concern to the bleeding disorder community, is highlighted in these fictional stories. The author describes his novel as a creation of fiction and poetry, and a work of history and the imagination.



Tamara Walks on Water
Shifra Horn
Piatkus Books, 2003

Tamara, a photographer from Jerusalem, recollects her family history up to 1940 with an emphasis on the women from Jaffa. Tamara describes events that happened before she was born, as if she were an observer. She tells her story in bits and pieces, like a puzzle, and not always chronologically. But the disjointedness works, building tension and interest for the reader.

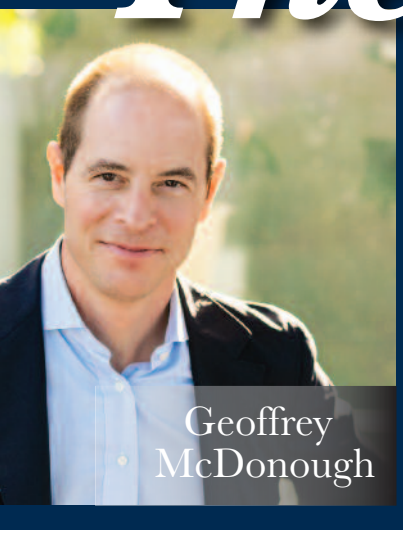
Growing up, Tamara always asks questions, looking for secrets. At age three, she learns that Simcha, the person raising her, is her grandmother. At 13, Tamara discovers that her mother, Nechama, died shortly after giving birth in 1913. Tamara relates the story of her parents, 12-year-old Nechama, of Ashkenazi descent, and 17-year-old Yehudi Abulafia, of Sephardic descent, who left behind a blood-soaked mattress when they first made love. After bleeding for a week, Nechama received the diagnosis of hemophilia, considered a rare condition in women in 1912. Nechama was warned against bearing any children.

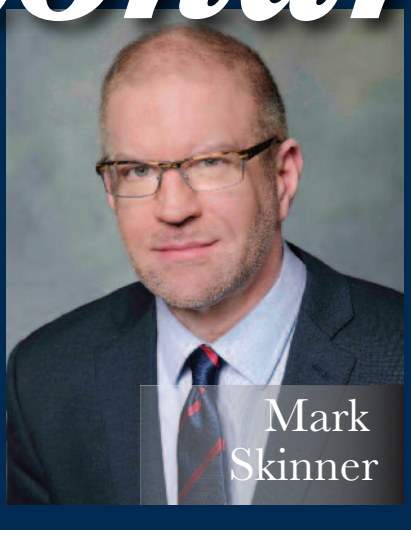
Before Simcha dies, Tamara learns the secret recipe for borscht, the soup that represents Simcha's love for her. Simcha also shares with Tamara the story of her ordeals as a child in Russia. At age 18, Tamara falls in love with Christodolos, a 33-year-old Greek Orthodox monk and archeologist who tragically drowns after impregnating her.

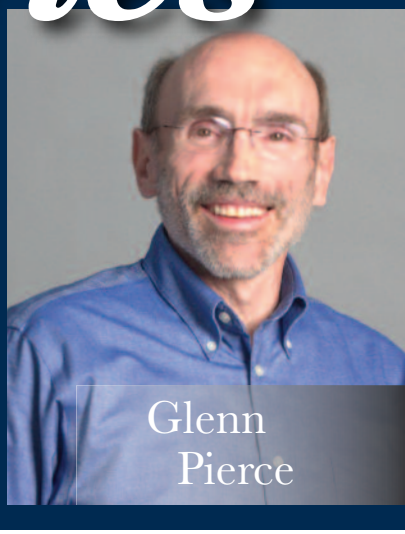
This novel presents memories embedded in the senses—especially the smells and tastes of food, a focus for the family. The title *Tamara Walks on Water* comes from a prophecy delivered by a reluctant Arab fortune teller to the teenaged Tamara that actually comes true. The award-winning and bestselling author lives in Jerusalem.

» page 18

The Visionaries







The Impossible... from cover

compassion of its chairman Ray Vagelos, Merck began donating huge quantities of Mectizan®, a drug that cures river blindness, to the World Health Organization (WHO). Over 18 million West Africans suffered from this debilitating disease. The company risked losing shareholders and profits. Eventually, the drug eradicated river blindness in many countries. I wondered what it would take to find a company with the leadership to travel the moral road, to give factor without expecting immediate—or any—return. I suspected it would take the impossible.

From Dream to Vision

Sometimes it takes a leader in a position of authority, like Ray Vagelos, to make permanent, historic changes. Sometimes it takes quiet, behind-the-scenes people to transform a dream into a vision of the future.

Glenn Pierce and John Cox were two of those people. In 2012 Glenn was Biogen's senior vice president of medical affairs, and chief medical officer for hemophilia. He led the development of the first prolonged half-life recombinant factor products, Eloctate® and Alprolix®, which at that time had yet to be FDA-approved. Glenn's passion for finding better treatment for hemophilia was both professional and personal. Born with hemophilia in 1955, Glenn had spent many months as a child in the hospital, immobilized. He knew what it was like to suffer because of inadequate treatment. Glenn's frequent bleeds destroyed his knees, ankles, and elbows. Later in life, factor concentrate gave him more mobility and less pain, but also HIV and hepatitis C.

Glenn became a tireless advocate, seeking financial compensation for people affected by hemophilia and blood-borne viruses. He joined the Blood Safety and Availability Committee in Washington to watchdog the nation's blood supply. He served as president of National Hemophilia Foundation (NHF) in 1992–1994 and 2002. As a physician and a scientist with hemophilia, Glenn was highly qualified to work for industry, first at Amgen, then at Bayer Healthcare, and later at Biogen.

Traveling the world, conducting clinical studies for Biogen on its new products, Glenn began to see firsthand the devastation of untreated hemophilia for patients in developing countries. Though he knew about the disparity in care between developing and developed nations, he began thinking outside the box, asking the same question I did in 1999: Why can't we make significant factor donations? Glenn's leadership skills kicked in, and his desire for action grew. He had an enormous advantage: he worked closely with Biogen's CEO George Scangos, and with John Cox, executive vice president of pharmaceutical operations and technology.

A vision was forming.

Eyes Wide Open: "A crazy discordance"

In 2012, John Cox (now CEO of Bioverativ[2]) was focused on scaling up the manufacturing process for Biogen's two extended half-life products for the future worldwide market. With hundreds of millions of dollars sunk into research on these products since 2009, John had to ensure that abundant product was commercially available when the FDA finally approved the two cutting-edge products. The hemophilia community had been waiting for these products for years, and Biogen and its shareholders awaited a return on their investments.

Although the products wouldn't be approved by the FDA until early to mid-2014, Biogen was busy getting the word out by publishing results from worldwide clinical studies. Anticipation was high. In July 2012, Glenn invited senior executives to Paris for their first WFH Congress: John Cox and George Scangos; Doug Williams, Biogen's executive vice president of research; Steve Holtzman, Biogen's executive vice president of corporate development; and Geoff McDonough, CEO of Sobi, Biogen's partner in Europe. About 5,400 delegates from the global hemophilia community attended the congress to network, present research, learn about leadership and treatment, and socialize.

2. Biogen spun off its hemophilia division, which became a new company, Bioverativ, in 2016.

At the congress, John recalls, "we heard WFH president Mark Skinner introduce the Global Alliance for Progress [GAP] program, to highlight the 'gap' in treatment between developed and developing countries. Mark wanted funding for HTCs in developing countries, but also needed product. We didn't have the product then, but we expected to soon. Mark's request was powerful."

John continues, "That night Glenn and I went to dinner. Glenn told me a story of a child in India he saw who was in the hospital bleeding for eight weeks. I said, 'You mean there's a kid there who just needs product?' It seems like we could do something about that."

Geoff McDonough was motivated, too, after witnessing the juxtaposition of haves and have-nots. "It was disturbing to watch young people at WFH walk with canes through the pharma marketing displays. There was a crazy discordance with what I saw. These are multibillion-dollar companies. Something could be done."

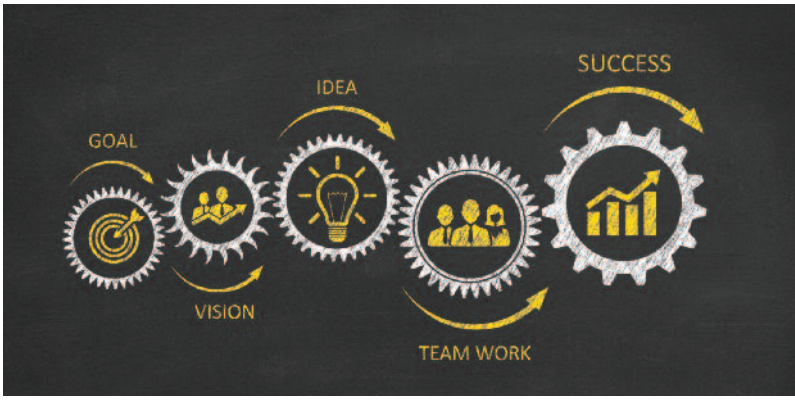
So the men began working on an innovative solution.

The Visionaries

When he made his keynote speech at the WFH Congress, Mark Skinner, also a person with hemophilia, had hoped for a powerful response from industry. As WFH president, he was responsible for setting the organization's vision to focus on developing countries, and for boldly leading toward that vision during the next five years. "I worked on my speech for months," recalls Mark, "to get the message right. I wanted to challenge industry that we needed to change the current model, and to think about the developing world. We needed someone—a corporate leader—to break out of the model."

Devastating effects of untreated bleeds: Dickson of Zimbabwe

It was no accident that Glenn had invited senior executives to sit in the front row of the enormous auditorium in Paris filled with thousands of hemophilia delegates—doctors, patients, industry reps—from around the world. "Privately," says Mark, "I shared with Glenn my thoughts before the congress, honing a message to increase donations to our GAP program.[3] Did I know WFH would receive this donation? No. But I hoped that we were teeing pharma up to consider something bold and innovative."



The executive team from Biogen reflected on Mark's speech, his message, and the patients they had met, and then held subsequent meetings with WFH. "That's where I presented more statistics on global hemophilia treatment," Mark explains. "That 75% of treatment products are consumed by only 15% of the world's population. There are huge disconnects in diagnosis and treatment. The way we've done business for the last 50 years wasn't going to bring us to the next decade of global hemophilia development that we need."

The congress, the meetings, the statistics, and the sight of disabled patients resonated. Biogen came forward with a bold, startling vision—and a plan.

Working Fearlessly: The Plan

Geoff recalls, "George and I agreed that it wouldn't be that hard to make an impact. We were going to start manufacturing [product to donate] from the beginning. We did the math: it could be up to 100 million units [IU] a year."

After the WFH Congress, Glenn and John discussed what Biogen could do as a company to help. "Biogen had a credo," John says: "*Care deeply, work fearlessly*, change lives. We took that to heart. I drafted a one-page paper and outlined a program and gave it to Glenn, who then outlined what it would take to bring it to fruition. We took it to our eight-person executive team. We needed to describe how we would do it and fund it. Naturally, it impacted the bottom line some. But they all said it made sense. This was the company really sticking its neck out."

The vision described in that one-page paper? Biogen would donate factor to the WFH Humanitarian Aid Program. *One billion IU of factor*. The impossible.

3. Like everyone interviewed for this article, Mark credits someone else with innovation that led to massive, positive change. The seeds of change started before Mark's tenure, with former WFH president Brian O'Mahony, who is also chief executive of the Irish Haemophilia Society. "Brian had launched GAP," says Mark, "handed the challenge of growing it to our team when I became president of WFH, and said, 'Don't let me down.' Brian is very strategically driven, and his model for GAP was wonderful. We needed to build on what he had accomplished."

"We needed a number bold enough that people would say *how is that possible?*" John smiles. "The 1 billion IU figure comes from literally the back of an envelope while I was on an airplane, a calculation of how many units we could do, including batches and yields. We had large bioreactors, so we could make significant quantities."

Glenn credits his colleague, John Cox: "He thought of the 1 billion IU. It didn't enter my thinking at that magnitude! John walked through the numbers, using the existing infrastructure." Biogen, explains Glenn, would fit in a couple of extra manufacturing runs each year and so produce factor to sell and factor to donate.

With many years' experience manufacturing biologics, John was perfectly placed to calculate what was possible. "But what made it truly possible," he emphasizes, "was that everyone pitched in. Employees donated their time: the regulatory and manufacturing team, above and beyond regular paid time. It wasn't easy. Supplying product is extremely complicated. There are myriad logistical and regulatory concerns. Steve Holtzman was a big part of making this production happen." Steve had the manufacturing competency that was needed to make this unusual production scenario happen.

Glenn notes, "John presented a compelling case that the donation could be done at a reasonable cost with no impact on existing manufacturing of all Biogen's products."

Glenn and John then turned to Geoff McDonough of Sobi. Biogen would do the manufacturing. Sobi would pay half the costs because Biogen and Sobi shared costs in their joint development of the two extended half-life factor products. The 1 billion IU would stretch over ten years, to 2025, with 500 million IU donated over the first five years.

"It was amazing to watch the Biogen and Sobi team," remarks Geoff. "They were inspired." Geoff praises this kind of compassionate response: "The people who join your company, the people I want to work with, they want—and wait to see—a before-and-after picture of a child who couldn't walk, who suffered, and who now can walk now, after treatment."

A watershed moment: John Bournas, WFH

The donation was a watershed moment for John Bournas, WFH executive director (2012–14), and for WFH's humanitarian aid program. "I always had our slogan 'Closing the Gap' right on my desk," says John, "and I looked at it every day and asked, *How can we build on the donations received and meet the patients' needs better and faster?* Could we do more to bridge that chasm? The donation was a daunting but amazing project that would go toward meeting this ambitious goal and further accomplish the mission to provide treatment for all."

Breaking the Mold

Manufacturers had donated product before 2012, but the Biogen donation was different. Glenn notes, "Nobody in history has dedicated entire runs for factor to donate." John Cox adds, "I'm not even aware of a donation program of this magnitude of any complex biologic product ever."

Glenn says that before this historic donation, "WFH got dribs and drabs of factor over the past 20 years. Donations were usually short-dated [close to expiration], with mixed assay sizes. The problem is you can't plan; you can't have a hemophilia healthcare strategy with the ministry of health in a country with only infrequent donations." And most ministries of health in developing countries buy no factor and rely only on donations.

Dr. Assad Haffar, WFH director of humanitarian aid, agrees. He explains that traditionally, the frequency of product donations was unpredictable. Donations were often short-dated product that companies couldn't sell fast enough and wanted to off-load before expiration. "With these types of donations, because they are unpredictable, you cannot make a plan for the recipient countries to have structured plans for using them."

The donation restructured the humanitarian program: Dr. Assad Haffar, WFH

Without a structured plan, countries couldn't ration annual use of factor for all patients, or use donations strategically, because they never knew how much they would get or whether they might get more. "Because the product donated to us was in limited quantities, with a limited shelf life, WFH's donations were limited to treating acute bleeds and life-threatening surgeries," Assad laments. "These were okay, but with limited quantities, you can't do total knee replacements—this would require 100,000 IU for one patient. We would donate that much to a country to last a whole year!"

"This donation brought certainty": Sarah Ford, WFH

According to Sarah Ford, WFH director of strategy and communications, "At WFH, we constantly talked about certainty versus uncertainty; when would the next unit come? Now this donation brought certainty."

A Daunting Shipment

Beyond the logistics of manufacturing an extra 100 million IU of factor per year to donate, the Bioverativ team had to consider what happened once the product left inventory and was shipped overseas. It's not easy to ship product into developing countries, whether for donation or sale. Each country has its own policies and rules about donations, especially biologics. There is detailed ministry of health paperwork, certificates of origin, shipping costs, customs regulations, and preparation for shipping that involves not breaking the "cold chain"—keeping products at a certain temperature. In short, the donation was a logistical nightmare.

"We also had to consider the ability of countries to absorb this amount of factor," adds Glenn. "A whole series of events had to occur. We shipped big pallets, which needed documentation. We had to have security measures in place, as these products are expensive: an auditing group was hired to assess security from airport to treatment centers, in each country. We had to control the supply chain. And there had to be secure facilities under lock and key once the donation got to its destination."

Senegal: Treatment center that received the WFH/Bioverativ donation

Some countries weren't prepared for these measures and, sadly, could not accept a donation. Other countries, such as Nepal, had a cold storage room built especially for the donation, so that product could be kept locked and at a controlled temperature. In developing countries, many hemophilia organizations operate in volunteers' homes, or in offices without security or air conditioning. Some countries experience brutal heat, faltering electricity, and bureaucratic corruption. Each country had to be assessed, with recommendations for change.

Mindsets toward treatment had to be changed as well. "I've taken ten trips to different countries," says Glenn. "It's a struggle to get them to treat even acute bleeds, a struggle to even use product because they want to hoard it for emergencies. A struggle to get orthopedic surgeons involved, because they are worried [about treating patients with bleeding disorders]. A struggle to get patients to the centers—they think there is no product. A struggle to get them to use the proper dose—most clinicians underdose because they have so little product. Most countries don't have home therapy. It's a struggle to get them to think about low-dose prophy in kids even just for five years—this would save some of their joints!"

"You are not here merely to make a living. You are here in order to enable the world to live more amply, with greater vision, with a finer spirit of hope and achievement. You are here to enrich the world, and you impoverish yourself if you forget the errand."

—Woodrow Wilson

Assad agrees. "We needed the recipient countries to develop more strategies and some kind of procedure to absorb this huge increase in donation." WFH would typically send donated product to only one medical center, he explains. "It was especially important not to keep product in one center, but to distribute it to other centers in the country. So that needed *more* recommendations on how to transport the product, how to store the product, and guidelines on how to use the product. We have nine fact sheets on this alone!" Egypt is exemplary: it used the WFH recommendations wisely, and now sends donated WFH factor to its 11 centers.

The donation even impacted the way WFH was structured internally. "We had to have bigger storage and shipping facilities to handle this increase." Assad notes that today, "instead of a humanitarian department with one to two people, we now have a whole department of people, and hired Kankakee AR Crossroads to handle the logistics of storage and distribution." WFH continues to engage Hemophilia of Georgia, which for years has generously volunteered its staff and storage to handle smaller donations from other companies and institutions.

A Donation with Impact!

What has the Bioverativ donation of factor accomplished?

Increased available factor to donate from 21 million IU to 122 million IU per year.

Increased treated patients from 2,119 in 2014 to over 12,300 in 2016, in 41 countries.

Treated nearly 16,000 acute bleeds, more than 790 of them lifesaving.

Doubled the percentage of children receiving treatment, from 14% to 28%.

Provided factor for more than 1,000 surgeries from 2016 through March 2017.

Imagine the possibilities if all manufacturers donated on this scale!

More than Charity

In developing countries, the Bioverativ donation has had an enormous impact on mindsets: on what's possible once there is a committed stream of factor. When a clinician thinks she will have only 25,000 IU per year in donations to share among 150 patients, she believes treatments like prophylaxis and corrective surgery are impossible. Patients are often turned away, discouraged from asking for factor.

Glenn reports, "As a result of the Bioverativ donation, some countries are now doing more surgeries, and doing prophylaxis for the first time. These products were used in over 1,000 major surgeries in 2016, a remarkable number! And it's an incredible educational opportunity for local clinicians."

Retired from Biogen in 2014, Glenn now travels as a WFH board member to countries receiving WFH donations, and helps train clinicians. Assad explains, "Our training now has different levels. First, about hemophilia in general and how to treat it; second, about how to dose the donated products."

John Cox remarks, "The message we give physicians in these

Patient's home in rural Kenya: Distance, poor infrastructure, and poverty make it hard to access factor

clinics is that you can trust there will be another package of product to treat patients. We want this donation sustainable."

When product is sustainable, treatment improves, because physicians and patients can plan. Assad notes, "We encourage countries to start prophy for children under age four; this is a critical age when children start to develop joint disease. If we can preserve joint function in the first five years, than the kids will be healthier in the future."

Product donations also encourage growth for the national hemophilia organization. One of the main tasks of an organization is outreach—finding the patients, and getting them diagnosed correctly. This is difficult in countries with limited healthcare funding, infectious disease outbreaks to battle, all-volunteer hemophilia organizations, poor infrastructure, and even social taboos about poorly understood disorders like hemophilia. Without product, many countries are reluctant to do outreach. Nigeria has only 250 patients identified, with an estimated 8,000 nationwide. Before the Bioverativ donation, Haemophilia Foundation of Nigeria feared finding new patients. What's the point of finding patients when you have no product to offer them?

Sarah answers: "Now that an important part of the solution—factor—is at hand, we can do outreach and find patients. Our national member organizations [NMOs] faced many challenges in identifying new patients, because the availability of treatment was limited. So a steady donation of factor was the stimulation to form diagnostic labs, identify patients, and then to treat them."

Will Charity Breed Complacency?

One major concern of a large, steady donation is government complacency. Governments in developing countries have limited healthcare budgets. An expensive, rare disorder like hemophilia

Patient in Tanzania receiving the first-ever donated factor

Bioverativ/Sobi team's first trip to Africa: Assad Haffar (third from rt.) with Geoff McDonough (second from rt.)

is almost never approved as a budget line item. Donations might mean a country won't consider funding factor purchases in future. Sarah understands this. "We don't want governments to say 'Oh, you've already solved the problem with this donation.' We want the NMOs instead to show the governments that quality of life improves as people become more mobile and pain-free, that a child on prophy goes to school. People go to work. With the donations, the NMOs will have quantitative results; this may help encourage governments to support securing treatment options for their patients."

Glenn quotes the old saying, "You don't want to just give countries fish, you want to teach them how to fish." And product donations are doing just that: by allowing WFH to teach clinicians about hemophilia, by strengthening and challenging the NMOs, and by supporting the government's commitment to buy product.

The irony, says Geoff, is that "these countries often can't get the government involved without a physician's expertise, but the expertise is lacking because there is no product." With WFH donations, physicians get involved, and the government healthcare system finally takes notice and also gets involved. "And while we are decades from them buying product," adds Geoff, "government may instead agree to buy diagnostic equipment, or get a new roof on a clinic."

The First Multi-Year Donation

The Bioverativ donation of 1 billion IU of factor is a blockbuster humanitarian act, unique in that the company calculated an amount of factor to donate from its very first commercial release, to be produced alongside Bioverativ's commercial products. Yet this isn't the first multi-year donation from a factor manufacturer. In 2009, CSL Behring was the first company to provide a multi-year, full shelf-life donation to WFH. At the time, this represented a 50% increase in total quantity of donated product to WFH: 3 million IU per year over three years. Though it seems small compared to the Bioverativ donation, CSL's donation represented the first time in history that a stable, guaranteed supply of product existed to donate to developing countries.

Leadership Inspires

So far, other companies haven't attempted to match Bioverativ's astounding generosity. Why? Perhaps it wasn't planned for in the budget. Perhaps companies don't want to donate products to countries where one day they hope to *sell* products. As executive director of WFH, John Bournas worked with all of WFH's corporate financial donors to sustain the giving, which was done exponentially during this time. His hope was that this donation "would continue to spur on more aid and donations of factor in places like Senegal and Kenya, where purchase of hemophilia products is limited."

At first, some companies in the industry may have thought this donation was a publicity stunt, because Biogen was a new player in the hemophilia market. But Bioverativ, the company created when Biogen spun off its hemophilia business, plans to keep donating.

Assad believes, "Other industry leaders will see that this is making a long-term difference. I'm optimistic that this will create interest from other manufacturers. We are sure this will grow more and more."

Sarah adds, "WFH has worked so hard to request that companies move from providing short-dated donations to ensuring sustainable donations. There's still a wait-and-see mindset from some, because this has never been done before. I think after the data is in from 2016, a full year, there will be a better understanding that this idea can work."

And it's begun. In April 2017, Grifols announced an eight-year factor donation commitment to WFH totaling 200 million IU. Combined with this is a three-year agreement with CSL Behring for 22 million IU, and an agreement with the Korean Green Cross for 6 million IU. With the input of all these collaborators, WFH now has enough factor to help countries stabilize its use in treatment and long-term planning. Under the current leadership of Alain Weill, WFH president, and Alain Baumann, WFH CEO, WFH is continuing the vision of ensuring a predictable, sustainable model for its Humanitarian Aid Program.

John Cox stresses that the donation "*is* having an impact. WFH is doing a fantastic job. But it's a start. The model is working, so now we need to scale it in an even bigger way and include more companies."

From Dream to Reality: Senegal

In 2015 WFH invited the Bioverativ/Sobi team to Senegal, an impoverished West African nation, to see their donation at work.

"John and Geoff are very compassionate," says Assad, "and they were deeply affected by what they observed. If they had any doubt about humanitarian aid, this visit made them understand that something needed to be done."

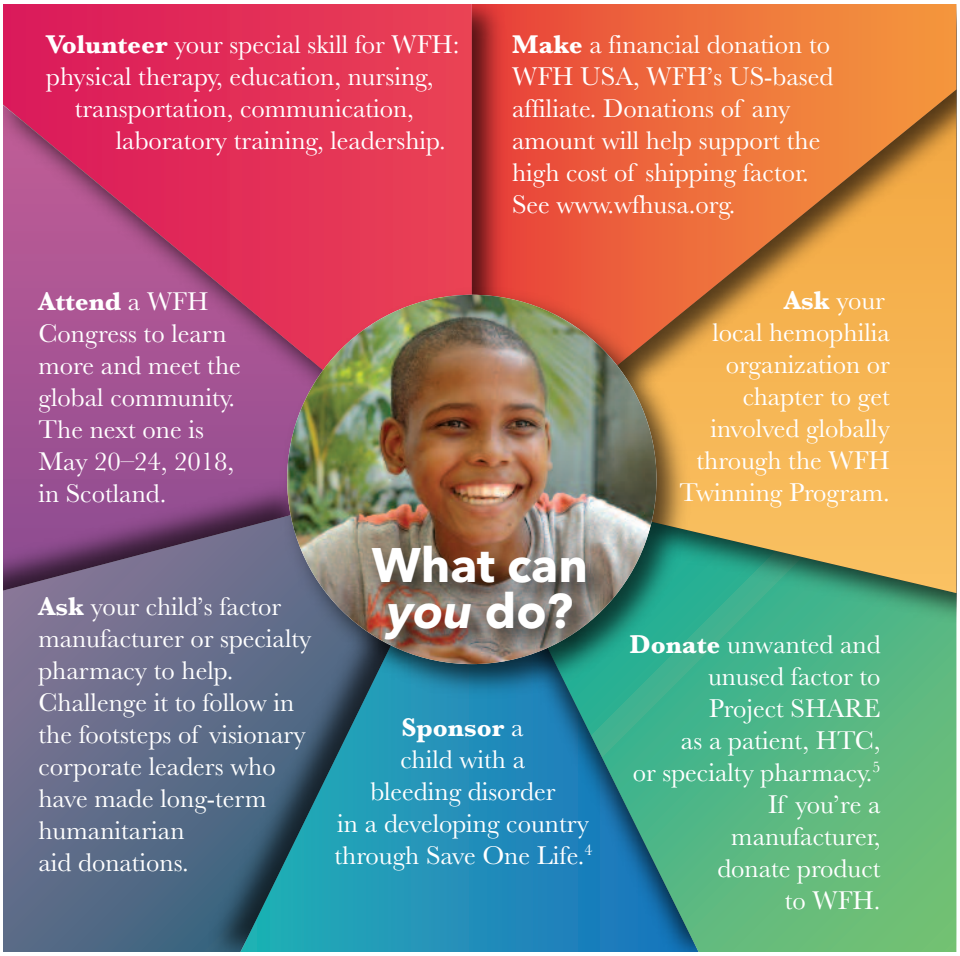
John Cox recalls, "When we toured the treatment center in Senegal, we saw our product in a cold room. There it was. We had come full circle." Geoff adds, "On the ward in Senegal, a child and his mother traveled over 50 miles with an active bleed, yet the child looked so calm. A huge crowd at the center watched as, for the first time in Senegal's history, a child was being treated more than once for a single bleed." Geoff smiles, but then notes, "Before we get too congratulatory over that one child…there are 50 more like him."

John Cox hopes the Bioverativ donation will change the mindsets of other companies and community members. "The message across biotech—across the world—is that we *can* have an impact, and it's astounding."

John Bournas adds, "People always talk about the Gates Foundation and what they're doing. This donation doesn't have the visibility of a Gates donation, but in terms of impact, this is enormous: it takes aim at the unmet needs of many patients in the most challenging socioeconomic environments."

The Bioverativ donation transcends profit at a time when US corporations, particularly their CEOs, are often criticized for their greed. It's a case study for leadership and vision, and one of the greatest humanitarian acts in pharmaceutical history. Geoff asserts, "We're in this industry to make a difference…and not for a couple of quarters. For a lifetime. The reasons *not* to do it are easy to understand. But they are impossible to accept."

And by not accepting those reasons, two pharmaceutical companies have accomplished the impossible.



4. Visit www.saveonelife.net for more info. 5. Visit www.kelleycom.com for more info.

Project SHARE and WFH: Same Mission, Some Differences

Both Project SHARE (Supplying Hemophilia Aid and Relief) and WFH's Humanitarian Aid Program donate factor to developing countries. There are distinct differences in how the two programs operate:

- WFH is a registered international nonprofit that serves as the official umbrella organization for 134 NMOs, and is recognized by the WHO. SHARE is part of a private company that helps over 35 developing countries per year.
- Factor donations to WFH are made directly by multinational pharmaceutical companies. SHARE accepts factor primarily from the US marketplace, in any amount, that has already been sold: from patients, HTCs, camps, distributors, and specialty pharmacies. It sometimes receives short-dated pharmaceutical donations.
- WFH accepts product up to within six months of expiration. SHARE accepts product up to within days of expiration.
- WFH donates to clinics, member organizations, and ministries of health. SHARE also donates to these groups; and to individual patients, provided they are vetted properly and verified through their HTCs.
- WFH donates to countries affiliated as NMOs. SHARE sometimes donates products to these countries; and sometimes to countries without a hemophilia organization, to encourage them to form one.
- WFH now ships about 122 million IU of factor per year. SHARE donates 5–7 million IU per year (although this year, SHARE will donate about 47 million IU, thanks to a unique donation from Octapharma).
- WFH has a dedicated department and full-time staff to handle its huge donations. SHARE has two part-time employees to handle all donations.

And the Survey Says . . . Carriers, Get Tested!

Paul Clement

Women have hemophilia too! Although much progress has been made over the past two decades in getting this message out, public awareness of bleeding disorders among women is dismal. Even women who are known carriers of the gene for hemophilia often don't realize that they can have hemophilia and be at risk of bleeding. Even carriers confirmed to have bleeding problems, and diagnosed as "symptomatic carriers," have run into roadblocks in accessing proper care.

Why are so many women undiagnosed?

The main reason is that they don't suspect they have a bleeding disorder and don't seek medical treatment. In spring 2010, a national study surveyed 1,243 women from the general public, aged 18 to 25, to assess their knowledge, attitudes, health behaviors, and menstrual experiences.[1] Many questions were designed to determine if women knew the difference between "normal" and "abnormal" bleeding patterns. The results were disheartening. Most knew that a bleeding disorder is a condition in which bleeding takes a long time to stop (77%), or blood does not clot (66%). But the women surveyed didn't know much about bleeding disorders, and only a few could identify risk factors for a woman with a bleeding disorder: periods lasting eight days or longer; bleeding through a pad or tampon in an hour or less; feeling a sense of flooding or gushing. Of the women surveyed who were identified as having one or more of these risk factors, only 20% had sought medical attention, and only 2% had been diagnosed with a bleeding disorder. Contrast this with studies showing that on average, 13% of women seeking medical treatment for menorrhagia (heavy periods) have von Willebrand disease (VWD)![2]

Bottom line: Most women don't seek medical treatment for menorrhagia, and if they do, few are correctly diagnosed with a bleeding disorder. To increase awareness, National Hemophilia Foundation (NHF), Hemophilia Federation of America (HFA), and other advocacy organizations have launched multiple programs for women with bleeding disorders. These organizations are now doing a great job providing resources for diagnosed women. But it's obvious that we must do a better job, to reach more women in the general population—to educate them about the risk factors and encourage them to seek medical treatment.

Lack of physician awareness

What happens when women do seek medical treatment? We've made some headway, as results from two different surveys show. A 2002 survey of 376 members of Georgia Chapter of the American College of Obstetricians and Gynecologists wanted to understand methods of diagnosing and treating menorrhagia, and to determine physicians' experiences and perceptions about bleeding disorders, particularly VWD.[3] The results were enlightening—and shocking. Only 3% of responding physicians considered VWD a likely cause of menorrhagia in women aged 15 to 44. When asked how many women with menorrhagia might have an inherited bleeding disorder, physicians' average response was "less than 1%." Most shocking: after practicing an average of 20 years, 42% of responding physicians reported never having seen a woman with menorrhagia who had a bleeding disorder. But statistically, each physician annually saw *several hundred* patients with menorrhagia who had VWD! Not surprisingly,

» page 16

1. Patricia A. Rhynders et al., "Providing Young Women with Credible Health Information about Bleeding Disorders," *American Journal of Preventive Medicine* 47, no. 5 (2014): 674–80. 2. M. Shankar et al., "Von Willebrand Disease in Women with Menorrhagia: A Systematic Review," *BJOG* 111 (2004): 734–40. 3. A. Dilley et al., "A Survey of Gynecologists Concerning Menorrhagia: Perceptions of Bleeding Disorders as a Possible Cause," *Journal of Women's Health & Gender-Based Medicine* 11 (2002): 39–44.

headlines

nonprofit

Going "Up" in History!

Peak Performer: Chris Bombardier, 31, first person with hemophilia to summit Mt. Everest

Chris Bombardier of Colorado summited Mt. Everest at 10:00 pm EST, May 21, becoming the first person with hemophilia ever to conquer the 20,029 ft. mountain. Underwritten by Octapharma, Chris's climb was documented by Patrick James Lynch, another person with hemophilia, and his film production company, Believe Ltd., to raise awareness about inequality of treatment of bleeding disorders globally. Chris also raised funds for Save One Life: all proceeds go directly to Nepal Hemophilia Society to help families who lost homes in the 2015 earthquake that killed over 9,000.

Why this matters: Chris's climb—and the coming documentary—highlights how, with adequate medicine and care, people with bleeding disorders can lead normal and even exceptional lives.

For info: www.facebook.com/adventuresofahemophiliac

global

Hear Their Voices

World Hemophilia Day

April 17

Every year hemophilia organizations worldwide celebrate this international awareness day for hemophilia and other bleeding disorders, held by World Federation of Hemophilia (WFH). This year's theme, "Hear Their Voices," focuses on women affected by bleeding disorders. Why this matters: Lack of awareness of women and bleeding disorders contributes to lack of care, and causes suffering. This event helps improve awareness and treatment.

For info: www.worldhemophiliaday.org

insurance

Risky Reform: ACA Under Fire

House Republicans narrowly passed the American Healthcare Act (AHCA), their replacement for the Affordable Care Act (ACA). AHCA allows states to apply for federal waivers to avoid many of ACA's regulations. Although it keeps the preexisting condition mandate of ACA, AHCA allows insurers to charge people with preexisting conditions several times more for an insurance policy, and also to deny coverage for medications for preexisting conditions—effectively excluding them from coverage. AHCA also imposes massive long-term cuts to Medicaid and reduces insurance subsidies to low-income individuals: tens of millions of people would lose health insurance. The bill has moved to the Senate, which was expected to write a more moderate version of the House bill, but instead made several significant alterations, including deeper cuts and structural changes to Medicaid, a program that insures one in five Americans. Why this matters: People with chronic health conditions finally achieved many long-awaited protections under ACA; these are now at risk under the GOP health plan.

For info: www.cbo.gov/publication/52486

soundbites

Several studies indicate that **severe hemophilia B** may be clinically less severe than severe hemophilia A. These findings suggest a review of when and at which dosages and intervals prophylaxis should be recommended to patients with severe factor IX deficiency.

Dimension Therapeutics announced that it will **discontinue development** of its factor IX AAV10 gene therapy product, DTX101, due to poor results. Patients enrolled in the study will continue to be followed for five years.

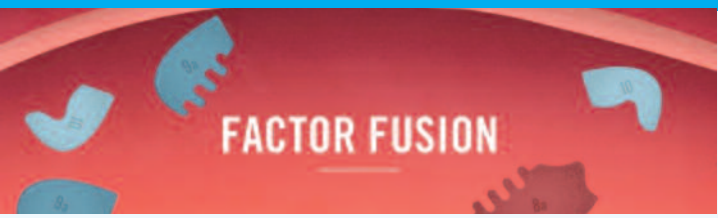
The Blood Center of Wisconsin launched VWF GPIbM Activity, a **new and more sensitive test** for von Willebrand disease designed to allow for more accurate test results.

AHEAD 300, a handheld EEG device, can quickly rule out whether a person with a head injury likely has brain bleeding greater than 1 mm across and needs further evaluation and treatment. The device is 97% accurate.

Roger Ailes, former chair and CEO of Fox News, died on May 18 at age 77. Ailes, who had hemophilia and once sat on NHF's board of directors, died of complications of a subdural hematoma after falling in his bathroom several days earlier and hitting his head.

Novo Nordisk's **HERO survey** in 12 countries revealed that the needs of a child with hemophilia can cause jealousy in non-hemophilic siblings if parents don't provide adequate time and attention.

patient programs



Factor Fusion Game

Genentech/Roche's 60-second educational game on the coagulation cascade and the role of factor VIII allows players to dive into the bloodstream to help stop a knee bleed in a boy who has fallen off his bike. On mobile or desktop devices, players control "factor 8" to help "factor 9" activate "factor 10" so the cascade can continue forming a blood clot. Why this matters: Children may learn something about how blood clots while playing this game.

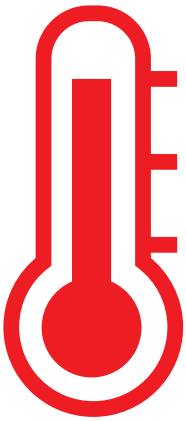
For info: www.gene.com

manufacturer

Gene Therapy Trial One Step Closer

On May 16, the US FDA granted fast-track status to SB-525, a clinical gene therapy for hemophilia A developed by Sangamo Therapeutics in partnership with Pfizer. SB-525 uses a recombinant AAV6 vector to deliver a factor VIII gene to liver cells. The FDA has already approved an investigational new drug application and issued Orphan Drug designation for SB-525. Fast-track status allows a phase 1/2 clinical trial in adults with hemophilia A to begin screening subjects for enrollment by mid-2017. Data from this study are expected in late 2017 or early 2018. Why this matters: This is one of five planned gene therapy trials in hemophilia A that may move us closer to a cure.

For info: www.prnewswire.com



Factor VII: The Heat Is On

FDA accepted a biologics license application for a new product from LFB pharmaceutical group. LFB's recombinant coagulation factor VIIa (eptacog beta) is a treatment for hemophilia A or B in adolescents and adults with hemophilia A or B patients and inhibitors. So far, eptacog beta has not received commercialization approval from any regulatory authority. Why this matters: If approved by the FDA, LFB's eptacog beta will become the first recombinant factor VIIa competitor to Novo Nordisk's NovoSeven product, introduced in the US over 20 years ago.

For info: lfb-usa.com

FDA Greenlights Novo Nordisk's Factor IX

The FDA has approved the biologics license application for Rebinyn® (nonacog beta pegol, N9-GP), a recombinant factor IX glycoPEGylated product for treating adults and children with hemophilia B. Rebinyn is indicated for on-demand treatment of bleeding episodes and for perioperative management of bleeding with hemophilia B. It's not indicated for routine prophylaxis or for immune tolerance induction (ITI) in patients with hemophilia B. Why this matters: Novo Nordisk expects to launch Rebinyn in the US in the first half of 2018.

For info: www.novonordisk-us.com

YOU... from page 13

the survey showed that gynecologists rarely (3%) refer a woman with unexplained menorrhagia to another specialist.

Fast forward a decade. In 2012, a similar survey of 503 ob-gyns had more positive results: nearly 39% of obstetricians and 77% of gynecologists were likely to consider VWD or another bleeding disorder as a cause for menorrhagia.[4] And over 80% who had seen patients with menorrhagia attributed the problem to a bleeding disorder. Perhaps most important, instead of referring patients to specialists only rarely, most physicians referred patients with menorrhagia to other health-care providers, nearly 45% to hematology.

Although it's hard to compare surveys of different physicians a decade apart, the change in demographics of the patient population at hemophilia treatment centers (HTCs) also reflects an increased awareness in the medical community of bleeding disorders in women. Between 1990 and 2010, the HTC population grew 90% from 17,177 to 32,612—and most of this increase was due to additional VWD patients.[5] This increase is expected to continue; unfortunately, these numbers only scratch the surface of the estimated 3.2 million people in the US with VWD, half of them women.[6]

Hemophilia carriers with low factor levels

The normal range of factor VIII and IX is between 50% and 150%, with most people being close to 100%. Factor VIII levels often vary, and may more than double due to the effects of hormones and other variables, such as stress or pregnancy. Factor IX levels normally remain fairly stable. Being a carrier for hemophilia puts a woman at risk of bleeding because of low factor levels. Carriers usually have factor levels between 30% and 70%, with most around 60%. But factor levels in carriers can vary widely, with some in the high-normal range and others below 10% (in extremely rare cases, below 1%). Research shows that even women with mildly low factor levels—40% to 60%—are at risk of bleeding.[7] They may experience not only menorrhagia, but bleeding after tonsillectomy, tooth extractions, surgery, or trauma from accidents; and prolonged bleeding from minor cuts or joint bleeds. This isn't well known among many carriers, so they may not seek treatment.

Every bleeding disorder advocacy organization offers educational materials on this topic, and it's probably a safe guess that every chapter newsletter has published multiple articles on the risk of bleeding in carriers. Yet for a variety of reasons, the message hasn't been received by everyone affected.

All women who are carriers should have their factor levels checked!

But simply seeking medical treatment for excessive bleeding may not be enough—you may have to advocate for yourself. Carriers with bleeding problems are often diagnosed as "symptomatic carriers," and a course of treatment is recommended. Everything should be okay for these women, right? Not necessarily. The word "carrier" often conveys the wrong meaning. In decades past, it meant you had the gene for a disorder, but you yourself didn't show symptoms of the disorder. Many physicians who are not bleeding disorder specialists still have this definition in mind, but we now know that carriers can indeed have the genetic disorder. We don't know for sure how many carriers have excessive bleeding, but a common estimate is that about one-third of carriers have factor levels below 50%, placing them at risk. These women have a factor deficiency *and mild hemophilia*. They have often been diagnosed as symptomatic carriers because some doctors resist using the word hemophilia based on the simplistic notion that "only males can have hemophilia."

The symptomatic carrier diagnosis *must* be laid to rest. Not only is it misleading, but it often prevents women from getting the treatment they need. And insurance companies increasingly use a literal definition of "carrier" to deny coverage for treatment, arguing that symptomatic carriers don't actually have the disorder. If your factor level is lower than 50%, request a diagnosis of mild (6% to 49%) or moderate (2% to 5%) hemophilia!

Knowing your factor level is essential. To rule out low levels, all women who are carriers should have their factor level checked (and if you are a carrier for hemophilia A, checked at least twice). If your levels are below the normal range, request a diagnosis of hemophilia. And get the word out: talk to your peers and let them know that most carriers are at risk of excessive bleeding.

4. Vanessa R. Byams et al., "Evaluation of Bleeding Disorders in Women with Menorrhagia: A Survey of Obstetrician-Gynecologists." *American Journal of Obstetrics and Gynecology* 207, no. 4 (2012): 269.e1–e5. 5. Judith Baker et al., "US Hemophilia Treatment Center Population Trends 1990–2010: Patient Diagnoses, Demographics, Health Services Utilization," *Haemophilia* 19 (2013): 21–26. 6. F. Rodeghiero et al., "Epidemiological Investigation of the Prevalence of von Willebrand Disease," *Blood* 69 (1987): 454. 7. I. Plug et al., "Bleeding in Carriers of Hemophilia," *Blood* 108, no. 1 (2006): 52–56.

As I See It... from page 3

completely out of factor. By a certain age, people with hemophilia in the Caribbean will have endured all types of pain, have a good concept of it, and know when a bleed is a bad one, a very bad one, or a "killer." With that knowledge and experience, we know when our hand is forced and we have no choice but to use up our limited supply of factor.

My two uncles grew up at a time before factor was introduced in Barbados. Legends, you could call them, and their wealth of knowledge has been beneficial not only to our family, but to all others with hemophilia on the island.

Recently, a Barbados Hemophilia Association was established here, to advocate and bring awareness to the public. One achievement it's working toward is the establishment of a dedicated HTC here in Barbados. Next, we'll need to work on a supply of factor for all. I feel that not much can be done for me, but for the younger ones with hemophilia, things can change.

Leemar Yarde, 29, lives on the island of Barbados. He has hemophilia B with inhibitors. In his free time, he enjoys music, gaming, and hanging with friends and family.

Inhibitor Insights... from page 4

situation. Sometimes you must be the squeaky wheel to get what your family needs.

Developing a relationship deeper than simply patient and provider is common with inhibitor patients. "The [inhibitor] families are seen and contacted much more frequently than most with their annual [HTC] visit," says Claudia Mackaron, RN, nurse coordinator for the Ted R. Montoya HTC. "This makes the inhibitor family more a part of the HTC members' lives." When Caeleb started spending less time in the hospital, we missed our HTC team. The constant contact we'd had with our HTC brought the staff into our family life outside of a crisis.

The comfort level varies between a patient and HTC team, and this can be challenging. At times, I disagreed with a clinician. I questioned the care my son was receiving, and despite my comfort level with the team, I had to speak up. I realized that, like family, the team members weren't easily offended, because we were all working toward the goal of giving Caeleb the best treatment. Frequent communication that is not necessarily for routine checkups often occurs as both patient and medical team work together to handle a crisis. A bleed that seems to never resolve, a product not being as effective as in the past, and issues regarding insurance and reimbursement problems are concerns that plague families with inhibitors.

Keeping an open line of communication with the HTC team is critical for optimal care and when a patient is in distress. "Sometimes anxiety and frustration can become a road block to proper communication," says Abraham. "The psychosocial support from the HTC will be crucial to help. Social workers and a psychologist or psychiatrist can guide families through different financial and emotional struggles." Trust can be established when both the HTC and the patient are actively communicating, and the best outcomes have a better chance to evolve.

When patients and providers voice their concerns about treatment, this increases the chance of obtaining the best results. "Good communication is paramount to make sure that care is delivered appropriately," says Janet Ratte, RNC, specialty nurse pediatric hematology, Ted R. Montoya HTC. When in doubt, I always call my HTC. When the HTC asks personal questions, the patient may feel threatened; but if a good relationship has been established, new findings could help change the course of

treatment, often for the patient's benefit. And when patients question the HTC, staff are pushed to think outside the box to find new approaches and ideas. As long as everyone communicates, the best comprehensive plan may be achieved.

Living with an inhibitor can be devastating. But when the patient, family, and HTC team form a strong unit, moving forward with the patient's best interests in mind, this eases some of the difficulties. "Feelings of sadness and despair impact the social fabric of the family," says Winter. To handle the emotional challenges that inhibitors bring, allowing the HTC team to become part of the extended family can bring a huge sense of relief. One doctor finally stood back, assessed Caeleb's situation, and told us that we needed a "roadmap" in place for his care. Once done, that was the final piece that both of our HTC teams needed, including my husband and myself. We could now see the big picture, communicate more effectively, and implement a team plan of treatment for a better life.

Cazandra Campos-MacDonald is a motivational speaker, educator, and patient advocate for families with bleeding disorders. She writes a blog chronicling the journey of her two sons with severe hemophilia and inhibitors, and has written articles and blog posts for various publications. Cazandra's older brother, Ronaldo Julian Campos, died of complications from hemophilia as an infant. Cazandra lives with her family, Rev. Joe MacDonald, Julian (21), and Caeleb (11), in Rio Rancho, New Mexico.

Richard's Review... from page 5

Pained (Tong-jeung)
Lotte Entertainment, 2011
Writer: Kang Pool
Director: Kwak Kyung-taek
Cast: Kwon Sang-woo, Jung Ryeo-won, Ma Dong-seok

In contemporary Seoul, Park Nam-soon (Kwon Sang-woo) works as an assistant debt collector for loan sharks. He uses the threat of self-injury as a successful psychological ploy to force payment. Nam-Soon tolerates injuries because he feels no pain. He has lived with analgesia since his childhood as an orphan. Nam-Soon fails to collect a debt from Joo Dong-hyun (Jung Ryeo-won), a young woman who has hemophilia and sells handmade jewelry on the street. Pitying the woman he calls a "darn scrawny girl," Nam-soon invites Dong-hyun to share his apartment. He cannot feel their first kiss.

Describing her hemophilia, Dong-hyun claims that only seven women in the world with the same condition have survived past age 20. One scene in the film shows her mixing the refrigerated treatment vials with a needleless transfer device, applying a tourniquet, and then transfusing the mixed contents through a syringe and butterfly needle set. Regrettably, proper sterile technique is not filmed.

While hospitalized for pneumonia and excessive bleeding with menstruation, Dong-hyun breaks up with Nam-soon because she doesn't want them to be a burden on each other. This decision has dire consequences: Nam-Soon dies when he takes a dangerous job to earn money to pay for Dong-hyun's expensive factor from France. The tragic Korean love story involving a vibrant woman and a languid man is enhanced by an unexpected soundtrack, with one song in English. Despite its tragic story, the film has a few comedic interludes. The script is based on a 2006 unpublished comic book by Kang Pool.

In my quest to identify strong fictional characters in foreign novels and film, I was surprised and encouraged that the protagonists I found happen to be women with bleeding disorders. Perhaps these international examples of hemophilia in popular culture will encourage more awareness of all bleeding conditions.

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Project SHARE had a busy 2016, providing donated factor around the world. Here's what we did:

- Donated 6 million IU of factor (valued at $6 million) to 34 countries.
- Donated 1,606 mg of NovoSeven (valued at $2.5 million) to 9 countries.
- Made the first-ever donation of factor to St. Lucia.
- Provided factor for hemophilia camps in the Dominican Republic and Romania.
- Visited Uganda, Kenya, and the Dominican Republic to assess patient needs.
- Made our first donation to Malawi.

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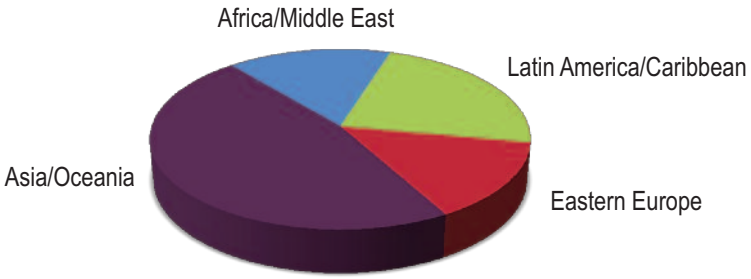

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Inbox... from page 2

Project SHARE

On behalf of Hemophilia Advocates Philippines, I thank Laurie Kelley, Project SHARE, and Octapharma for the factor. Now we are doing home visits to get assistance to those who need treatment.

Andrea Trinidad
Hemophilia Advocates Philippines
The Philippines

Lucky recipient of factor in the Philippines

Once again, I thank God for Project SHARE and for your lives! Now, I can have my surgery. God bless you!

Juna Pablo Saavedra
Bolivia

Serges Takou of Cameroon

Thank you so much for the donation. It will allow us to solve many emergency problems and do circumcisions for all patients not yet circumcised.

Serges Takou
Cameroon

Sajid Qureshi of Pakistan

I am feeling very lucky and very thankful to you. The HTC provided me the best treatment from the donation you sent, which was more than my expectations.

Sajid Qureshi
Pakistan

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