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AABB News

Addressing Blood Needs **Around the World**

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Contents

8

A Look at Maternal Health in Resource-Limited Settings

Expanding blood accessibility for pregnant women can reduce high maternal mortality rates due to postpartum hemorrhage, improving outcomes in low- and middle-income countries.

13

The BLOODSAFE Kenya Project

Researchers discuss the continual blood shortage in Kenya and the implementation of community-facility transfusion committees to improve blood availability in Kenyan hospitals.

COLUMNS & INTERVIEWS

DEPARTMENTS

Advancing Global Health

Meghan Delaney, DO, MPH

Welcome to our first fully digital edition of *AABB News*! As an AABB member, you have complete access to the *AABB News* archives, which will be updated with a new issue every month. As always, *AABB News* is the best place for news about the blood and biotherapies field, comprising news, feature stories and exclusive content on critical issues affecting the field – all at your fingertips. In addition, we are excited about launching an online platform to expand our storytelling capabilities, engage our members and enhance our readers' experience. This new chapter for *AABB News* will contribute to environmental sustainability while improving accessibility and convenience for our members.

Improving Care Worldwide

This issue of *AABB News* focuses on addressing blood needs around the world—a cause that is close to my heart. I became actively involved in global health outreach in the field more than 15 years ago. During my first visit to Africa as an MPH student, I was exposed to the multidimensional crises related to lack of blood; from maternal health crisis due to obstetrical hemorrhage, to children with severe anemia, patients with cancer and those with traumatic injuries. Since then, I've partnered with colleagues and blood experts in the field of transfusion medicine to develop sustainable blood transfusion systems and eliminate blood deserts in low- and middle-income countries (LMICs).

AABB is committed to improving lives by making transfusion medicine and biotherapies safe, available and effective worldwide. We appreciate the efforts of blood and biotherapies professionals to expand access to care and ensure that more people can receive lifesaving transfusions.

The first feature in this issue addresses maternal mortality rates in LMICs and discusses viable solutions to expand access to blood transfusions for expectant mothers. The second feature highlights the BLOODSAFE program in Kenya and its efforts to evaluate the gaps in the availability of safe blood for patients with severe anemia and hemorrhagic conditions. In addition, this issue features a Q&A with filmmaker Jon Kasbe, where he discusses his documentary *Blood Rider* that describes blood delivery on motorcycles and the blood shortage crisis in Nigeria.

AABB's mission is to make transfusion medicine and biotherapies safe, available and effective worldwide. While we are focusing on advancing global health in this issue of *AABB News*, this is a priority for our association every day of the year. Expect to read more about AABB's global efforts and our worldwide community in the coming months. ■

Meghan Delaney

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AABB President

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AABB Foundation President Discusses the Future of Medicine

By Kendra Y. Applewhite, MFA
Managing Editor

Richard Schäfer, MD, FRSB

Richard Schäfer, MD, FRSB, is a professor and the medical director of transfusion medicine at the Institute for Transfusion Medicine and Gene Therapy of the Medical Center of the University of Freiburg. He was previously appointed as an assistant professor of transfusion medicine at Goethe University in Frankfurt am Main, Germany. He is also a member of the Center for Stem Cell Biology and Regenerative Medicine at the University of Maryland School of Medicine in Baltimore, and he was elected as Fellow of the Royal Society of Biology.

Schäfer's research is driven by questions of basic and translational science. He has authored more than 100 peer-reviewed publications in the fields of stem cell biology, clinical cellular therapies and transfusion medicine. He is an associate editor of the *Journal of Translational Medicine*, and an editorial advisor for *BMC Medicine*. He also serves on the editorial boards of several other international peer-reviewed journals. In addition to his scientific work, he has a strong interest in teaching and in developing novel teaching formats.

Schäfer has been active in AABB for many years; he is currently serving as vice president of the AABB Board of Directors, as member of the Standards, Accreditation and Regulatory Council, and as AABB-ISCT Human Platelet Lysate Joint Working Group co-leader. He has also served as the secretary of AABB's Cellular Therapies Section Coordinating Committee (CTSCC), the CTSCC liaison to the Annual Meeting Education Committee, and as co-leader of the Novel Therapies and Cellular Therapies Product Development Subsection.

He has been actively involved in planning for AABB's annual meetings, including pre-meeting workshops, sessions and committee meetings. He is also member of the International Society of Blood Transfusion, the International Society of Cellular Therapy, the German Society of Transfusion Medicine and Immunohematology, and the German Stem Cell Network.

Schäfer spoke with *AABB News* about his career path, the future of transfusion medicine and his dedication to supporting ongoing research and the AABB Foundation.

The Journey

What inspired you to pursue a career in transfusion medicine and biotherapies?

I'm a trained internist, and during my clinical work, I encountered several interesting cases that intersected with transfusion medicine. This exposure helped me to see the clinical relevance of transfusion medicine, as well as the significant opportunities regarding research. This truly intrigued me, and after finishing my internal medicine training, I switched gears and pursued the field of transfusion medicine, which I have never regretted. This field offers a broad variability of topics, as well as the opportunity to conduct research. Transfusion medicine training can vary in different countries. In Germany, for example, we have a clinical specialization for transfusion medicine. What remains consistent is that transfusion medicine is a critical interface between multiple clinical disciplines. In modern medicine, it is rare for transfusion medicine not to be involved in patient care somehow.

How did you become involved with AABB? Can you share your leadership journey?

I spent about four and a half years in the U.S., with two of those years at Harvard and Stanford, which significantly influenced my professional and personal life. During this time, I connected with colleagues who were active members of AABB. They suggested that I join the Association. I have enjoyed being a member from early on, yet, initially, I wasn't aware of the great spectrum of benefits that AABB membership offers. But the more I got involved, the more it became clear to me how valuable it was to join this great organization. It's about the spirit of the Association. People are given opportunities to engage and contribute, which is vital to organizations that serve their community. That's something I've felt strongly about AABB from the very beginning, and that's still the case today.

I've been active in the organization's community for many years. What has always impressed me about AABB is the opportunities it offers. I was given the chance to actively contribute, and I seized that opportunity to serve and to give back. I joined the Board, and over time, I grew into positions such as the vice president and, eventually, president of the AABB Foundation.

This role suits me well because I'm deeply engaged in research, so I understand the importance of supporting it. The AABB Foundation is a great avenue to support research, which aligns with both my professional and personal goals.

Transfusion Medicine in Germany

What unique challenges or advantages does Germany face in maintaining a safe and sufficient blood supply?

When it comes to blood banking, we face the same challenges that are common to the field everywhere, so I wouldn't say they are unique in terms of blood supply. The main challenges are the shortage of blood, especially during certain seasons like summer and flu season, and demographic changes, which is a common issue everywhere, not just in Germany. This pertains also to cell and gene therapy (CGT), where we still see challenges, despite impressive scientific breakthroughs. One of the major issues is the regulatory landscape, which likely needs restructuring to make processes more efficient and bring these therapies to patients more quickly.

Have you been involved in any initiatives or strategies that you believe could be beneficial for other countries facing similar challenges?

We have developed the National Strategy for Gene- and Cell-Based Therapies in Germany. I am a part of this interdisciplinary initiative, and one of the key points in this strategy is the streamlining of regulations, which has been identified as a critical step in advancing CGTs.

There are things we can also learn from other countries. For instance, in the U.S., there were programs created to address specific blood group frequencies within different populations. This approach helps ensure that blood donations come from the same population or populations with similar blood group phenotypes, which can make the matching process easier and more effective. There's a lot we can learn from these kinds of programs in terms of how to better serve different segments of the entire population and how to keep the donors engaged.

Like other countries, we have a mix of blood suppli-

ers, as well as donation centers at places like university hospitals. This mix ensures a reliable supply across the country and provides flexibility, so we are not overly dependent on one or two suppliers. I believe this approach also exists in many other countries.

Leading the Foundation

Why is it important to give back and support the mission of the AABB Foundation?

This is crucial because we want to make a sustainable impact and serve our community in the long term. We aim to provide ongoing support for research because we recognize that real progress in medicine takes time. It's usually a step-by-step process, and breakthroughs don't happen in just one or two years. It often takes many years, or even decades, to make significant advances, followed by sustainable implementation. To support this, we have funding instruments that address both basic and translational research. However, this requires a continuous influx of funds to keep the momentum going.

As president of the AABB Foundation, what initiatives are you most passionate about promoting? What impact would you like to make during your term?

We have programs like the Early-Career Scientific Research Grants Program and the Process Development Grant Program. I'd like to see greater visibility for these programs and a continued influx of high-quality applications. The more we can expand and attract top-tier projects, the better the opportunity we have to fund the most impactful initiatives. We do receive excellent applications, but there's always room for more.

One of the first things I did when I became president of the AABB Foundation was forward information about our grants to International Society of Blood Transfusion and the German Society of Transfusion Medicine as well as other relevant bodies to help spread the word. I also made sure to invite researchers, with a particular focus on young talent, to apply. Whenever I give talks or engage with the community, I always make sure to mention these opportunities. I'm convinced that by consistently promoting these programs, they will gain more visibility over time. It's not about self-promotion, but rather about creating a cycle where high-quality applications lead to impactful research. As the Foundation makes a greater impact, more people will recognize its work, and this positive cycle will continue.

Can you tell us about any groundbreaking projects or research you're currently working on at your institution?

We're working on cell therapies, particularly for regenerative medicine and immunotherapies. Our goal is to gain a detailed understanding at the cellular level of what makes these therapies work effectively. When transplanting cells, the cell therapy product consists of millions, if not billions, of cells. However, not all of these cells are identical. We believe it's worthwhile to investigate the detailed composition of cellular therapies and how this relates to the consistent quality of these therapies. One of the key challenges in ensuring the broad and sustainable implementation of cell therapies is predicting their efficacy and producing a stable product. This requires minimizing variations in processes like manufacturing or production.

Sometimes cell therapies work great, and other times, not so much. It would be valuable to understand why these variations in efficacy occur. The product itself is likely a significant part of the equation, but patient and donor factors also play a role. Understanding the product at a cellular and molecular level is at the core of my research and will help us address these challenges.

The AABB Foundation has a global reach. How can the Foundation's efforts align with and support the needs of diverse populations around the world?

It's not just about blood group distribution; it's also about the growing need for individualized therapies. What works for one person may not work for another, and we need to understand this variability better. This is where Foundation efforts, amongst other highly relevant areas, can play a crucial role, for example in research aimed at understanding the variability of CGTs. This includes looking at how these therapies are applied to different individuals and tailoring them accordingly.

The challenge is that we can only develop truly individualized therapy if we understand the individual differences at play. Although we are all equal, genetic differences and other factors—like epigenetics—could be behind the observation that what works for one person may not work for another. The more we understand these individual patient profiles, the higher the chances we have of making progress in treatment and improving outcomes. I believe we are on the right path.

Can you provide one helpful tip for applying for a grant?

Make a clear plan and explain it well. Be sure to articulate why this research is important. Identify the specific areas where it will have an impact. Make your case compelling and convincing.

The Future of Transfusion Medicine

What do you find most fulfilling about working at the intersection of research and biotherapies?

When you talk to clinicians, you're not discussing hypothetical situations. You're addressing issues that are happening right now, and you have the means to contribute to solving concrete needs. That's incredibly fulfilling. When you receive grant funding and bring your team together, there's nothing more satisfying than seeing your work and your team`s work bring you closer to clinical applications or being able to identify traits that could predict the efficacy of a certain therapy. For example, designing a clinical study to address a specific question involving transfusion medicine and/or biotherapies typically brings people across many disciplines together. It's also truly rewarding when the data support a significant positive outcome compared to standard care, or when it reveals something new that we didn't know before.

This is the unique nature of medicine as an applied science—bringing together cutting-edge technology, including AI, to address complex challenges. The intersection of technology, laboratory research and clinical application makes my work so intriguing to me. I have specifically worked with stem cells, red blood cells, extracorporeal photopheresis and even regenerative medicine and immunotherapies. At every level, you're involved in pushing the boundaries of what's possible. Beyond science, we also engage in good manufacturing practice (GMP) and have regulatory expertise, which positions us as valuable strategic partners for clinicians. And on top of it all, it's incredibly fun.

How do you see gene-editing techniques and cellular therapies transforming the field in the near future? What excites you the most?

Gene-editing techniques and cellular therapies will undeniably play a significant role in the future of medicine. If you had asked people this question 10 years ago, they might have been hopeful or optimistic, but uncertain about how it would all unfold. Today, however, we have impressive data and increasing clinical evidence, and although there are other developments in medicine that may not directly relate to CGT, it's clear that CGT will be a central part of the medicine of tomorrow. That's why it's crucial that we prioritize this in our field and work diligently to deliver these innovative treatments to our patients.

What excites me most is our potential to make substantial progress in mitigating or curing diseases that we are unable to do currently, such as certain types of cancer, metabolic diseases and degenerative disorders. For a long time, it seemed like curing these diseases was a distant dream, something that was beyond even the realm of possibility. Now, we're on the brink of turning that dream into a reality, and that's incredibly exciting. We are entering a new era, and we're active participants in it.

This feels like a quantum leap in the history of medicine, and it's happening right now. For example, sickle cell disease (SCD) and other blood disorders that affect millions of people, many of them young, suffer greatly and even die from these conditions. We now have the opportunity to make a sustainable impact on their lives, potentially curing or alleviating these diseases in ways we couldn't have imagined just a few years ago. However, there's one crucial aspect we need to address... although a scientific or technical breakthrough is a significant achievement, it's not enough if we can't make these therapies affordable and accessible. This is a challenge that all medical systems face unless they are entirely state-controlled. Therefore, in many parts of the world, including ours, economic sustainability and affordability of these products are key factors.

Take CAR-T therapies as an example. The initial costs are extremely high, but there is justified hope that these costs will decrease over time. We must ensure that these revolutionary treatments become available to everyone who needs them.

Having championed blood and biotherapies for decades, I see AABB in an excellent position to keep serving our community in the future that has already begun.

What is the last book that inspired you?

I'm currently reading a book by an archaeologist named Eric Cline called *After 1177 B.C.: The Survival of Civilizations*. The book examines how civilizations collapsed at the end of the Bronze Age. Yet, despite these challenges, civilization itself survived. If it hadn't, we wouldn't be here today. It really gives me hope. ■

Expanding Blood Accessibility for Pregnant Women in Resource-Limited Countries

By Kendra Y. Applewhite, MFA
Managing Editor

Caroline Wesonga Wangamati, MSc, MA, BCom, of Bungoma County, Kenya, first witnessed the devastating consequences of blood shortages during childbirth when she was visiting the referral hospital in Bungoma, a border town. That evening, a woman arrived in an ambulance. After the medical team rushed her to the operating room, Wangamati noticed the driver cleaning up a copious amount of blood pooled on the ambulance floor.

Moments later, the staff announced the patient had died. Wangamati heard the cry of a newborn, and everything clicked when she saw a member of the medical team cradling an infant in her arms.

"I didn't know anything about the patient up until that point. But in that moment, I realized the patient who died was the mother of the newborn child who would never know her mother. The referral had come too late," she recalled. "That was the day I became aware of the severity of postpartum hemorrhage [PPH]. For a long time, I was blissfully unaware of the blood challenges."

Although that tragic and preventable death occurred a decade ago, the same challenges of blood transfusions for PPH still plague Uganda, Kenya and many other countries today.

"The fact remains that PPH continues to be the leading cause of maternal mortality worldwide. Nearly 90% of these deaths occur in Southern Asia and Africa," stated Wangamati. "My counterparts in Uganda face similar challenges regarding access

to care and the adequacy of resources. It's a huge problem."

Blood Accessibility and Adequacy

According to the World Health Organization (WHO), nearly 95% of all maternal deaths occurred in low-and middle-income countries (LMICs) and most are preventable. Sub-Saharan Africa accounted for 70% of all maternal deaths worldwide, while Southern Asia accounted for 16%.[1] In Kenya, maternal mortality increased by 55% between 2017 and 2020.[2]

Wangamati, the advocacy lead for the Blood Delivery via Emerging Strategies for Emergency Remote Transfusion (Blood DESERT) Coalition and a blood ambassador for Kenya, and a member of the AABB Board of Directors, highlighted the challenges of accessibility and availability of blood transfusions in Africa's rural areas and explained the "three delays" model contributing to maternal mortality in LMICs: the delay in seeking medical help, the delay in reaching the facility and the delay in receiving adequate care at a health facility. PPH mortality can often be traced to these delays, she noted.

"Many women begin labor at home, and by the time they decide to go to the hospital, it is often [if there are complications] too late. If intervention is required, such as for bleeding, there are delays at every step," she said.

For example, a woman experiencing labor complications might seek care at her primary health facility first, but rural areas like Uganda or Kenya lack adequate blood transfusion facilities. She would then need to be referred to a facility that can provide transfusions. For Wangamati, this common scenario highlights a major issue in the health care system for maternal care.

"Referral systems here are weak, and the patient would likely have to travel by motorcycle, bicycle or, if lucky, an ambulance, which is also a rare resource. Once she reaches a facility that can provide the required care, further issues may begin," Wangamati said. "Most times, there is not enough blood in the blood bank or the facility itself for a blood transfusion. A substantial number of maternal deaths occur at these referral hospitals, often because the women arrived too late for any intervention, or because there was no blood available to perform a transfusion."

She also noted that health facilities capable of performing blood transfusions often struggle with competing priorities due to a limited blood supply. For instance, a hospital may have one or two pints of blood reserved for emergencies and must decide what qualifies as an emergency.

"Is it the woman who's bleeding out from childbirth or the road accident victims? What about a sickle cell patient in crisis or ongoing surgeries that require blood?" Wangamati asked. "The adequacy of blood supply is a huge issue, and doctors are frequently faced with this difficult moral and ethical dilemma and must decide which patient gets that one pint of blood. I've watched this dilemma happen for years, and it's a horrible position for anyone to be in."

Measuring the Gaps

An article published in *Transfusion* in May 2024 cited hemorrhage due to childbirth-related complications as a leading cause of mortality in India. The authors conducted a cross-sectional study from 2018-2019 exploring factors affecting cesarean delivery rates at first referral units (FRUs) in Bihar, India, to strengthen maternal health in resource-limited settings.[3]

Rohini Dutta, MBBS, MPH student, Global Women's Health Fellow at Brigham and Women's Hospital, co-first author of the study, noted that in Bihar, one of India's most populous and economically disadvantaged states, many government-funded FRUs responsible for emergency obstetric care lack functional blood banks or storage units.

"Our research found that more than 5,700 cases of postpartum hemorrhage occurred in facilities without reliable access to blood, a number that would only increase if cesarean delivery rates improved to meet the WHO recommendations of 10-15%. This represents a significant, life-threatening gap in maternal health care," Dutta said.

> "A substantial number of maternal deaths occur at these referral hospitals, often because the women arrived too late for any intervention, or because there was no blood available to perform a transfusion."
>
> —Caroline Wesonga Wangamati, MSc, MA, BCom

"We need urgent investments in blood banking infrastructure, but we also must consider alternative strategies like walking blood banks—mobilizing pre-screened local donors on demand—and intraoperative autotransfusion, a technique that allows women to receive their own salvaged blood in cases of hemorrhage. These approaches could be life-saving in resource-limited settings where conventional blood supply chains fail."

Dutta's key message to policymakers and health care leaders: Measure the gaps, invest in solutions and act with urgency.

"Blood unavailability is an invisible crisis, but its consequences are devastating," Dutta said. "We must rethink policies and implement scalable, context-specific interventions to ensure that no woman dies simply because lifesaving blood wasn't available."

Wangamati shared similar sentiments. She spoke to *AABB News* about the challenges of blood sufficiency in sub-Saharan Africa, with most countries not meeting the WHO recommended 1% blood donation rate.

"Most of sub-Saharan Africa is far below that threshold, apart from South Africa, Rwanda, Mauritius and Seychelles," Wangamati said. "But here's the thing: just meeting the 1% is not adequate. The reality is, in Kenya, we are at about 0.8%, yet we still have too many mothers, babies and patients with cancer dying due to a lack of blood and blood products. We still have a long way to go. Preliminary data from a research study being done in Kenya shows we're only meeting about 23% of the total demand for blood. We'll know we have sufficient blood when nobody is dying due to the lack of it. There's no other way to measure it."

Increasing Blood Donation and Awareness

Raising awareness about blood donation and providing education about the process can engage potential donors and spark a conversation about the importance of donating to save lives and reduce the maternal mortality rate.

"Many people say they had never realized how important it is to donate blood, so we need to normalize the conversation around blood. It should be regularly talked about in the media, churches and communities," Wangamati said. "Right now, blood is often seen as someone else's problem—until a crisis strikes and a relative needs it. To address this, we need to build a positive narrative around blood donation and put more effort into educating the public and promoting the health benefits of giving blood."

Wangamati mentioned a partnership with community colleges and universities in Kenya to facilitate blood donations with nearly 300,000 students. She lauded the medical students in Kenya for their efforts to tackle the blood shortage issue and expressed her pride in their initiative. "If we can get this moving, not only will we have a sufficient supply of blood, but we'll also be fostering a culture of regular donation among young people. Teaching them the benefits of donating will encourage them to continue donating as they grow older," she said. "It's encouraging to see future clinicians advocating for this cause."

Amplifying the Message

Wangamati's advocacy efforts include amplifying the voices of health care workers and empowering them to speak up about the issue, as they are often on the frontline and silent witnesses to mothers who could have been saved with blood donations. To that end, she has initiated discussions with the Surgical Society of Kenya and other professional clinician associations to bring the conversation to the forefront.

Wangamati also discussed her efforts to engage politicians and policymakers to drive advocacy. For policymakers, the message must be that investing in blood is not just a moral or health issue, but an economic one as well, she pointed out. "Many of them don't fully understand how integral blood is to the health care system. I focus a lot of my efforts on breaking that knowledge barrier and helping them see the economic benefits of investing in blood, which could lead to cost savings and reduced mortality rates for maternal health and other conditions," she said.

Her other key focus is ensuring that the blood agenda is owned by the government.

"The problem is that blood has historically been funded by donors, without governments taking responsibility for the agenda," Wangamati said. "Blood services are not prioritized, and funding is not allocated, and where it is allocated, it is not ring-fenced. The advocacy required is to persuade governments to include blood in their national budgets and treat it as a critical health resource. It's time to make blood a priority in Africa and ensure it is fully accounted for in countries' health funding.

Innovative Solutions

To address the high rate of maternal mortality in their population and improve outcomes, Wangamati suggested utilizing community health workers to educate and encourage expectant mothers to attend antenatal clinics and deliver in hospitals in the event of childbirth complications. The challenge, she noted, lies with women who are less educated and may not fully understand that complications can occur – or the potential consequences.

"We must think outside the box to find a solution and recognize the value of every single life we're losing," she said. "Maternal deaths are often lower among educated women living in urban areas. The onus is on us, as a health care system, to support all women and encourage them to seek care early in their pregnancy. We must take action today."

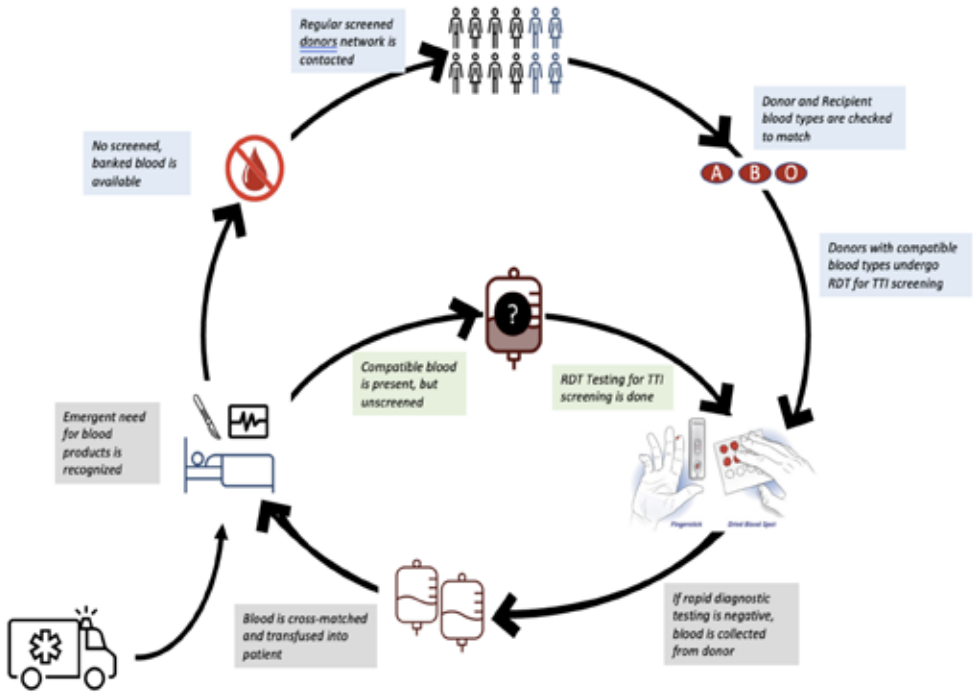
The Blood DESERT Coalition recommends three strategies for eliminating blood deserts and improving global blood infrastructure: civilian walking blood banks, intraoperative autotransfusion and

drone-based blood delivery.

Wangamati noted that adopting military practices, such as walking blood banks, has significant potential to treat and manage PPH, helping to save lives in severe cases.

"When there is no blood available, most facilities in sub-Saharan African countries rely on family replacement donors, or doctors often donate their own blood when a mother arrives hemorrhaging," she said. "The Blood DESERT Coalition advocates establishing a pre-identified group of low-risk donors in the community that can be activated in emergencies, so doctors don't have to make these critical decisions under such dire circumstances."

The key is refining the process by putting proper guardrails in place. Combining this with auto-transfusion could be a feasible solution that we can begin implementing today, she added.



Depiction of a Civilian Walking Blood Bank. Patient arrives at the ED with an emergent need for blood products. In Setting A (green), there is compatible blood present in the blood bank, but it is awaiting screening results. Given the immediate need for blood, the unit is screened with an RDT for TTIAs, before being cross-matched and transfused into the patient. In Setting B (blue), there is no compatible banked, screened blood available. A network of compatible, healthy, regular donors is contacted. The available donor is checked for blood type compatibility and screened for TTIA with an RDT before blood is collected. This blood is then cross-matched and transfused to the recipient. *Image courtesy of Blood DESERT Coalition.*

Raise the Volume

Wangamati shared her plans to collaborate with media outlets to raise awareness about maternal health and spotlight the critical issue, including a campaign with a popular radio host to shed light on high maternal mortality rates caused by a lack of blood.

"Blood is not seen as a sexy topic in media; journalists are not typically eager to talk about it. People tend to focus on other issues, like cancer or malaria," she said. "We're trying to leverage media influencers with large followings in Kenya to speak directly to the public. We hope to recruit more female donors since women contribute to less than 15% of blood donations on average."

Looking ahead, Wangamati said she hopes blood donation will receive more prominence in discussions and frameworks around PPH, such as WHO's PPH roadmap to combat PPH between 2023 and 2030. She posed the question: What solutions can we offer for women who have already lost copious amounts of blood by the time they present to a health facility?

"The approach makes sense in regions where interventions can be implemented earlier, but in our part of the world, women often arrive too late, and we need to factor that into our strategies," she said. "I believe countries are trying to solve this issue, but we need to shout about blood a little bit more. It's still too silent. The conversation still sits outside the room.

"When I sit with malaria or oncology experts, they rarely talk about blood or acknowledge that blood levels are critical for administering treatments like chemotherapy or radiotherapy," Wangamati continued. "Mobilizing various disease organizations to speak about the importance of blood would be a huge step forward." ■

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Caroline Wesonga Wangamati, MSc, MA, BCom, of Bungoma County, Kenya, assisting with a blood drive at a high school.

BLOODSAFE Kenya Puts Blood Shortage Solutions in the Hands of the Community

By Kerri Wachter
Contributing Writer

Many regions of the world that lack mature blood transfusion systems struggle with blood shortages. Robust systems, like those found in high-income countries, can minimize the impact on patients and can bounce back quickly. However, systems in low- and middle-income countries (LMICs) can struggle with constant deficit. Despite building a national blood network that has greatly improved the safety of blood, Kenya faces a continual blood shortage.

The BLOODSAFE Kenya project, Pathways for Innovation in Blood Transfusion Systems in Kenya, supported by the U.S. National Institutes of Health, is using on-the-ground data and implementation science strategies to create innovative community engagement models aimed to identify locally and context driven improvements along the blood continuum system. This initiative will aid in identifying pinch points that limit the availability and safety of blood and how different interventions might alter blood availability. The first part of the project was to conduct interviews across Kenya to understand barriers and facilitators on how blood is used, among other questions.

Deficits and Consequences

"We interviewed a diverse range of people for our qualitative work. In fact, we spoke to nearly 200 people asking them about their perceptions of blood availability. Despite improvements, everyone described a massive deficit in blood availability in Kenya," said Linda Barnes, DrPH, co-investigator affiliated with the University of Pittsburgh and the qualitative lead for the BLOODSAFE Kenya study. She is also an independent consultant in blood and biotherapies. "It's not just every now and then. It's causing a severe deficit that impacts the health workers, the families and obviously the patients themselves."

These deficits have real and devastating consequences. Barnes shared a story of a nurse who walks into the maternity ward everyday knowing that babies die because blood is not available for transfusion. The nurse said in a project interview, "We'll lose many babies. I can tell you there are days I wake up and I go to my ward, and we have lost seven babies in one morning… they will keep quiet and everybody lives like nothing has happened. But they'll only happen because there was no blood. If the blood was there, maybe they would have had a chance."

Individuals often take heroic measures to gather critically needed blood to try to close those gaps. "This might be trying to find gas for a vehicle so it could drive to the next town to get blood or mobilizing hospital staff to donate blood," said Barnes. "These were the kinds of stories we would run into. Late last year, for example, there was an interruption in the supply chain of reagents. So, there was essentially no blood testing available."

National System

The Kenya Tissue and Transplant Authority (KTTA), formerly the Kenya National Blood Transfusion Service (KNBTS), is a decentralized but coordinated blood banking system with one national processing facility and six regional facilities, where blood is collected, tested, stored and distributed. There are additional blood collection satellite centers; blood must go to a national or regional center for testing and processing.[1,2] According to the World Health Organization (WHO), which recommends that a given country must supply 1% of blood donations based on a national population formula, Kenya has an annual

blood need of approximately 530,000 units.[3] In Kenya, collections only amounted to about 30% of the blood needed in 2019, according to KNBTS.

There are so many factors that are at play in getting blood from where it's collected to patients, it's hard to know what factors to target more efficiently. That is where the BLOODSAFE Kenya project comes in. The researchers have taken a novel approach, applying industrial engineering to create a vein-to-vein model — based on information collected from those interviews, quantitative data that is available about blood collection and novel technology to collect data on blood demand across diverse hospitals in Kenya — to identify the bottlenecks. The model they developed also allows users to vary parameters such as geographic location, socioeconomic factors, disease prevalence, blood collection and testing equipment shortages, and transportation logistics to understand the impact of these changes on blood availability.

"We know from blood banks, how many donors showed up and how many units of blood were collected, but we have very little understanding of where that blood was used, for what type of patients, what type of conditions and which types of hospitals. So, a large part of our formative work was getting a rich understanding of the system at large," said Pratap Kumar, MD, PhD, co-lead investigator for the study. Kumar is an associate professor of digital health policy at University College London and senior research fellow at Strathmore University Business School in Nairobi, Kenya.

Barnes noted, "I want to be really clear that while the national facility holds blood drives and recruits or motivates voluntary blood donors and repeat donors, the primary source of blood is family replacement donors in the settings we're working in. They are mobilized in real time and are motivated to donate because a relative needs blood. It's a small donation circle."

Gathering Data

Juan Carlos Puyana, MD, one of the principal investigators added, "In the first two years, we interviewed lab technicians, clinicians including obstetricians and surgeons, laboratory staff, administrators, government officials, patients and even ambulance drivers … we hypothesized that the challenges would be quite complex whether you were at an urban hospital with trauma and injuries, or a rural area where the incidence of malaria and HIV is very high, or a place where there is nothing — so called "blood deserts," a few cattle, little water and nomads that move from place to place." Puyana, a trauma surgeon, is a professor of surgery, director for global health-surgery at the University of Pittsburgh and chair of the Institute of Global Surgery at the Royal College of Surgeons in Ireland.

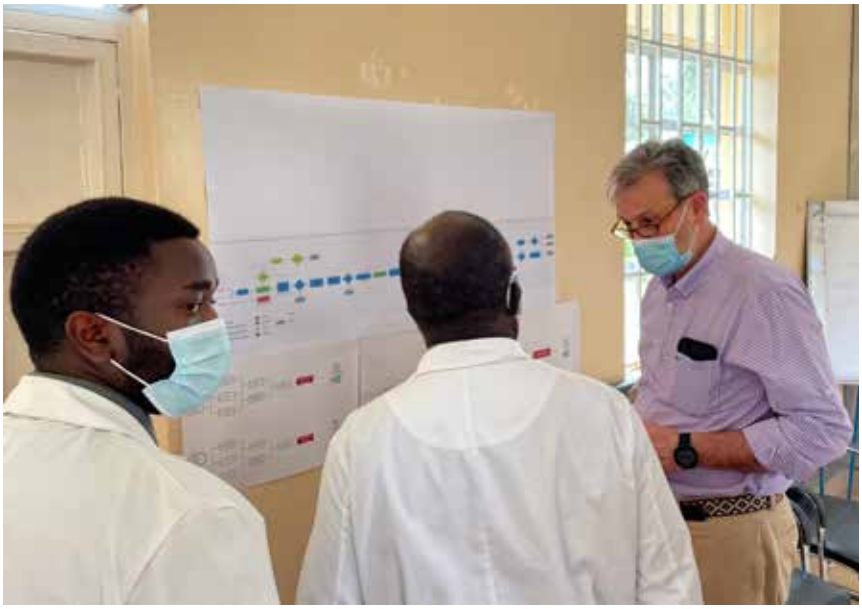
Three counties with varying populations and geography were selected. Nakuru County is the third largest city in Kenya with a large surrounding urban region. The county has a large population and higher average income, with good access to private and public health care and adequate medical equipment and supplies. Siaya County is a typical African rural setting that is largely farmland. However, there is a high burden of malaria and HIV. Turkana County is a very remote desert area in northwest Kenya with a nomadic population and few roads.

Research assistants piloting interview guides with faculty at Strathmore University.

The Model

The researchers partnered with a group of industrial engineers, who had been working on a similar challenge — to maintain the cold chain for vaccines. The engineering team looked at the inputs and outputs of the system and the key steps in between. Then, they modified or modulated those inputs. For example, if blood is collected, then it needs to be tested and screened for infectious diseases.

"How long would it take for that sample to go from the location



Process mapping to get input on the development of the model.

where the blood was collected to the place where it was tested, and then how long would it take to get the results," said Barnes. "We modeled all of these different activities and then began to apply inputs based upon the different time feedback we were getting from the three counties that we were studying.

Barnes added they were then able to develop a very robust model that allows users to see how altering a particular parameter — types of donors, transportation logistics, testing, lack of equipment and time of year, among others — will impact blood availability. For example, how would shortening the number of days to receive testing results from 5 days to 1 day affect the availability of blood?

The Trial

The next step is a randomized controlled trial involving local community-based blood committees that will use the model, along with near real-time data on blood demand in hospitals, to develop strategies to offset deficits in local blood availability.

The trial, which started in September 2024, involves nine hospitals — three in each county. These will be randomized so that six sites will be intervention sites working with these committees, and three will function normally.

Involving the Community

The important and the novel part is the composition of the committees, noted Barnes. "We will have five community members — formal and informal leaders in the community — two community health workers, and five hospital personnel, ideally, a surgeon, a blood bank director and someone from maternal care or obstetrics/gynecology," she stated.

These community-facility transfusion committees will be provided with information about local blood availability and then supporting them with training on the utility of blood and project management skills, Barnes added. In addition, a small stipend is available that the committee can use to apply interventions.

Local Solutions

Kumar noted, "there are lots of different challenges in each of these counties, and we shouldn't be the ones dictating what changes need to be made. Our goal is to create this local decision-making structure that will take all this information that we provide to make locally appropriate decisions."

The interview process highlighted a disconnect between the community and facilities. It appears that the communities often don't really know why blood is needed and where it's used, while hospitals are relatively disconnected from the community as a source of blood. "We proposed that it would be more beneficial to have a greater linkage between the community and hospitals related to blood and to create joint decision-making structures that would then take locally appropriate steps," said Kumar. The committees will identify the bottlenecks and develop solutions that fit their community, whether that means motivating community members to donate, mobilizing testing or reducing wastage, for example.

Similar structures like community health committees are intended to increase community participation in health systems. Lessons from this study on how communities can support the blood needs of hospitals, "can be put into existing structures in any part of Africa or the world," said Kumar. ■

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Filmmaker Jon Kasbe's Documentary Sheds Light on Maternal Mortality Crisis in Nigeria and Efforts to Improve Blood Delivery

By Kendra Y. Applewhite, MFA
Managing Editor

In Lagos, Nigeria, motorcyclists known as blood riders dart through congested highways to deliver life-saving blood products from local blood banks to hospitals. Traffic in this bustling city often leads to relentless gridlock, hindering timely medical delivery services to patients in critical need, particularly mothers in labor. In Nigeria, blood delivery can take up to 24 hours. Blood riders are on a mission to change that.

The documentary *Blood Rider*, by Jon Kasbe, vividly captures a blood rider's race against time to deliver blood to a hospital in under an hour to save lives. Kasbe and his team spent one month embedding in a Lagos hospital, following six pregnant women and four blood delivery riders. The thrilling documentary tells the story of Joseph, one of the city's blood riders, and Deborah, a pregnant woman in need of a blood transfusion during labor, and how their worlds collide. The immersive storytelling and fast-paced action convey the intensity of the situation.

Nigeria is recognized as one of the low- and middle-income countries (LMICs) with the highest maternal mortality rates in the world. To bring the film to life and shed light on the blood shortage crisis and poor maternal health outcomes in the country, Kasbe partnered with Google and LifeBank, a Nigerian health care company that uses technology to navigate blood delivery to hospitals through an around-the-clock team of dispatch riders, and he released the film in 2020.

Kasbe spoke to *AABB News* about his filmmaking process, his inspiration for telling this story and what he hopes audiences will take away from the documentary.

Can you tell us about the inspiration behind the film and what drew you to the project?

Google reached out to let me know about the work LifeBank was doing. I spoke with LifeBank's CEO Temie Giwa-Tubosun and some of the blood riders over Zoom, and through those conversations, I realized that this was more than just a job for the riders. They took great pride in their work and felt a deep sense of purpose. They believed they had found a unique solution to a very complex problem, one that was being solved at a local level.

What I found exciting was that, unlike many situations where outsiders come in to solve a problem without fully understanding it, this was a problem that local Nigerians truly understood on a deep level, both logistically and culturally. They created a solution that was innovative, using technology and Google to find the fastest routes from blood banks to hospitals while also navigating the relationships between the hospitals to ensure everyone got what they needed. In the end, they were saving lives, and everyone involved was passionate and excited about the work they were doing.

At first, I thought the story was inspiring, and it definitely grabbed me. But as I learned more, I realized it was also nuanced and pressing. We made this film just

before COVID-19 hit, which turned out to be interesting timing. As storytellers, we always understood the importance of the health care field, but it was fascinating to see the world start to pay attention to it in a new way as we all faced the pandemic together.

How did you decide on portraying Joseph and Deborah as the key characters? What set their stories apart?

From the beginning, we were following multiple blood riders and pregnant women because we knew that structurally, we wanted to capture a rider who ultimately saved a pregnant woman's life. That was always the main goal, because we heard numerous stories about how this was happening in real life.

We spent about 5 to 6 weeks in the field, following several people, not knowing how challenging it would be to align the stories of the blood riders and pregnant women. For example, we followed one blood rider who rushed to save a pregnant woman, but he didn't make it in time. In other cases, we followed families during childbirth, only to have a blood rider we weren't following arrive and save their lives.

There were a lot of misses. But with Joseph and Deborah, it all came together toward the end of our shoot. We had been following both of them throughout, waiting for that pivotal moment. Then Deborah went into labor, and Joseph was the rider who got the call. On one hand, we were lucky that everything aligned. But on the other hand, we had prepared for the unexpected by spreading our resources to follow multiple people, which increased the chances of their story arcs colliding.

What kind of research did you conduct before filming the documentary? How did the process help to shed light on maternal mortality in Nigeria?

Our team, along with the Google producers, conducted extensive research on this topic, and our findings were a major inspiration for making this film. We hope the film draws more attention to the statistics, raises awareness about the dangers and challenges associated with childbirth and encourages audiences to feel more comfortable discussing it. Through our research, we discovered a significant amount of resistance and fear around talking about the birthing process and the potential complications that can happen when bringing life into the world. This is something that needs to be normalized and discussed more openly.

How does your documentary address the challenges faced by health care systems, particularly in areas with limited access to blood products and life-saving blood transfusions for pregnant women?

This documentary does a great job of highlighting the importance of infrastructure without getting bogged down in the weeds and logistical details of the problem. It tells a story of hope, showing how locals have found a creative solution to a complex issue that is making a dramatic impact. When we were making this film in 2019, we learned that it took more than 24 hours to get blood from blood banks to hospitals in Lagos. These blood riders have figured out how to deliver blood in under an hour. That's a drastic improvement. We were truly inspired by their work, and we hope this story inspires others to see that even when long-standing problems feel complicated, dire and impossible, creative solutions still exist. Especially when local voices and perspectives are prioritized and truly listened to.

What were some of the biggest challenges you faced during filming? Were there any unexpected hurdles or difficult moments?

We faced many obstacles throughout the process. Filming *Blood Rider* was extremely challenging. In the beginning, we had all this gear, like gimbals and drones, to capture the feeling of what it's like for a blood rider to receive a call and rush immediately to the hospital. But when we reviewed the footage at night, it didn't capture the true essence of what it felt like to be on those motorcycles with the riders delivering blood. So, we decided to scrap all the gear and use the bare minimum.

Whenever a rider got a call from LifeBank and hopped on their motorcycle, I, along with the other cinematographer, David Bolen, would climb on the back of the bikes, sitting backwards, and handhold the camera.

Blood Rider Joseph's timely delivery helps to save Deborah, who desperately needs blood due to childbirth complications.

Deborah arrives at the hospital to give birth.

We followed the rider, squeezing our knees together to hold on. This technique created a much more authentic feeling of what it was like to be on the bikes during these deliveries, and that was our goal. We wanted to make the experience as realistic as possible.

Another huge logistical challenge was the unpredictability of what would happen. We followed pregnant women who had smooth births without complications, which was a relief, and we were truly grateful for those outcomes. But there were also times when we followed women through complicated births, and the blood riders didn't make it in time; those situations didn't work out. We witnessed real tragedies. The unknowns took a real toll on the team. We didn't know what would happen, when it would happen or whether we'd capture that life-saving moment we'd been hearing about, because with it came a lot of tragedy. We got a taste of all of it, but we didn't know initially if it would come together. We all feel incredibly lucky and fortunate that it did.

Were there any specific stories or moments from the film that deeply impacted you as a filmmaker?

There were so many moments and memorable characters, but Deborah, Joseph, and Deborah's husband, Steven, really stood out to me. Steven was really sweet and nervous about everything going smoothly. It was a tender moment watching them prepare to bring life into their home, while also wanting to make sure they were doing everything right.

Joseph, who doesn't have children of his own, feels a deep sense of responsibility toward his community. He carries a weight on his shoulders to save people's lives. It was special for us to witness that, and it's inspiring to see someone who has found their calling.

These three characters were the ones who truly captured our attention, and they became the focal point of the film. Our hope is that their stories inspire viewers to reflect on their own callings and consider what they want to do with their lives.

How did your collaborations shape the film and contribute to its vision?

LifeBank was a key partner because they are the true experts in this field. They live and breathe this work every day, and they educated us on what we needed to understand to portray it accurately.

Google made this project possible by financially supporting us and providing the resources to tell the story properly and accurately.

On the creative side, there were many people involved, including a talented editing team that sifted through all the footage and captured the real essence of the story in just 17 minutes. I feel fortunate to have had the opportunity to work with such talented, smart and hard-working people.

What is your favorite aspect of filmmaking and storytelling? What excites you?

My favorite part is meeting people I wouldn't otherwise have had the chance to meet and becoming a part of their lives, especially when it feels like a true collaboration. *Blood Rider* would not have been possible if LifeBank hadn't embraced the idea of a genuine partnership, where we were equal collaborators on the project. We worked closely with the community to find people who understood the importance of their work and were willing to open their lives to the filmmaking process, which isn't always easy because you're being watched in your home by people you've only just met. It can feel intense, but it's also rewarding. As a filmmaker, each story changes me and challenges my preconceived notions and the way I see the world.

It was a true privilege to be with Deborah and Steven during such an intimate, intense moment in their lives. It even changed the way I view that kind of moment for myself. The most special moment is the connection you build with the people you're working with.

What's next for you in filmmaking?

Since *Blood Rider*, I made a film about a humanoid robot in Hong Kong (*Sophia*), which is coming out in May. I also finished a four-part docuseries about a controversial spiritual teacher in Utah that's called the *Deep End*. Currently, I'm working on three totally different documentaries that I can't say too much about yet, but hopefully they will be out in the next couple of years. ■

To learn more about Blood Rider *and to watch the short documentary, visit jonkasbe.com/blood-rider.*

Around the World: Key Resources for Blood and Biotherapies Professionals

By Drew Case
Senior Communications Manager

Global Education, Training and Staffing In Transfusion Medicine

Laboratories in low-, middle- and high-income countries suffer from persistent resource limitations of one kind or another—medical technologists, equipment, work environments, and career structures—all of which ultimately affect the quality and accuracy of test results.

The intended audience for this book is physicians, students, clinical trainees, nurses, medical technologists, transfusion safety officers, phlebotomists, and blood administrators. It should be of particular value to transfusionists actively engaged in teaching as well as for self-directed learners.

This book is a collaborative project from members of the AABB Global Transfusion Forum as well as outside reviewers who provided objective critiques. It is intended to be a valued resource for transfusionists around the world.

Global Perspectives and Practices In Transfusion Medicine

This collaborative project of the AABB Global Transfusion Forum uses the concepts of contextual impact, interdependence, and transformative learning as foundations for bidirectional benefit. Authors representing more than 25 countries, with more than 75% living and working in low- and middle-income countries (LMICs), offer authentic perspectives on current local practices from those with contextual expertise, who are often underrepresented in the literature.

The authors—physicians, nurses, medical technologists, and managers/administrators—provide peer-reviewed content for similar professionals, as well as trainees. Beyond its practical value to readers from LMICs, the book will also be useful to those in high-income countries who are open to the innovative potential of sharing ideas and adaptive practices within a global community.

AABB Quality Certificate Program

The AABB Quality Certificate Program is based on the implementation of AABB's Fundamental Standards for Blood Collection and Transfusion. The Certificate signifies that facilities in limited-resource settings have initiated their quality journey by adhering to AABB standards. Facilities that obtain the Quality Certificate will gain international recognition for their efforts with a two-year certificate issued by AABB. Learn more about the Quality Certificate Program at aabb.org.

2024 Annual Meeting Sessions

Access the following 2024 AABB Annual Meeting sessions on-demand along with e-learning programs at education.aabb.org:

- Crisis in the Rural Hospital Without Access to Blood Transfusion: Innovative Strategies to Address Global Blood Deserts and the Blood DESERT Coalition
- A Global Perspective of Roles, Responsibilities and Impact of Transfusion Safety Officers
- A Model to Improve Transfusion Quality Systems Worldwide: AABB (Association for the Advancement of Blood & Biotherapies) & AMMTAC (Mexican Association of Transfusion Medicine, AC) International Partnership Chronicles ■

10 Benefits of Strength Training for Physical Health

By Edward Griffin, MBA, MS, MLS(ASCP)SBB, CLS, CQA(ASQ), PMP
Contributing Writer

"A year from now, you may wish you had started today.""

—Karen Lamb

Strength training, also known as resistance training or weight training, is a fundamental component of physical fitness that offers numerous benefits for overall health. Although many people associate strength training with bodybuilding or athletic performance, it is an essential practice for individuals of all ages and fitness levels. From improving muscle strength to enhancing cardiovascular health and preventing chronic diseases, strength training has a profound impact on physical well-being. There are myriad benefits of strength training and incorporating it into a fitness routine can lead to a healthier life.

1. Increases Muscle Strength and Endurance

As individuals age, muscle mass naturally declines, a condition known as sarcopenia. According to research, adults who do not engage in regular resistance training can lose approximately 3–5% of their muscle mass per decade after the age of 30. Strength training counteracts this loss by stimulating muscle fibers, leading to increased strength and endurance. Stronger muscles improve daily functionality, making it easier to perform tasks such as lifting groceries, climbing stairs or engaging in recreational activities.

2. Enhances Bone Health and Reduces the Risk of Osteoporosis

Bone density decreases with age, increasing the risk of fractures and osteoporosis, particularly in postmenopausal women. Strength training places stress on bones, stimulating bone-forming cells called osteoblasts. Over time, this leads to stronger bones and a reduced risk of fractures. Studies have shown that resistance training can help maintain or even increase bone mineral density, making it a crucial component of osteoporosis prevention.

3. Boosts Metabolism and Promotes Fat Loss

Unlike traditional cardio exercises, strength training plays a unique role in boosting metabolism. Muscle tissue is metabolically active, meaning it requires more energy to maintain than fat tissue. As individuals build muscle through strength training, their resting metabolic rate (RMR) in-

creases, leading to higher calorie expenditure even at rest. This makes strength training an effective strategy for weight management and fat loss. Additionally, resistance training contributes to excess post-exercise oxygen consumption (EPOC), commonly known as the "afterburn effect," where the body continues to burn calories after the workout has ended.

4. Improves Joint Health and Reduces Injury Risk

Strength training strengthens the muscles, tendons and ligaments that support joints, reducing the likelihood of injuries. For individuals with conditions such as arthritis, resistance training can alleviate symptoms by improving joint function and reducing stiffness. Stronger muscles act as shock absorbers, decreasing stress on the joints and lowering the risk of injuries from falls or repetitive movements.

5. Enhances Cardiovascular Health

Although strength training is often associated with muscle building, it also benefits cardiovascular health. Resistance exercises improve blood circulation, lower blood pressure and enhance heart function. A study published in the *Journal of the American Heart Association* found that individuals who engaged in regular strength training had a lower risk of heart disease compared to those who only performed aerobic exercise. Strength training can improve cholesterol levels by increasing high-density lipoprotein (HDL, or "good" cholesterol) and decreasing low-density lipoprotein (LDL, or "bad" cholesterol), thereby reducing the risk of heart disease and stroke.

6. Regulates Blood Sugar Levels and Prevents Type 2 Diabetes

Strength training has a direct impact on insulin sensitivity and glucose metabolism, making it a valuable tool for individuals with or at risk of type 2 diabetes. Engaging in resistance training enhances the body's ability to use glucose efficiently by increasing the uptake of blood sugar into muscle cells. Research has shown that individuals who participate in regular strength training experience improved glycemic control and reduced insulin resistance, decreasing their risk of developing type 2 diabetes.

7. Supports Mental Health and Reduces Stress

Exercise, including resistance training, triggers the release of endorphins, neurotransmitters that promote feelings of well-being and reduce stress. Additionally, strength training has been linked to lower levels of anxiety and depression. Engaging in structured resistance exercises provides a sense of accomplishment, boosts self-esteem and improves overall mood. Furthermore, the discipline required for strength training can enhance cognitive function and reduce the risk of age-related cognitive decline.

8. Improves Posture and Reduces Chronic Pain

Poor posture is a common issue resulting from prolonged sitting and sedentary lifestyles. Strength training targets key muscle groups responsible for posture, such as the core, back, and shoulders, promoting better alignment and reducing the risk of musculoskeletal imbalances. Moreover, resistance training can help alleviate chronic pain conditions, including lower back pain and knee pain, by strengthening the muscles that support the spine and joints. Many physical therapy programs incorporate resistance exercises to aid in rehabilitation and pain management.

9. Increases Longevity and Overall Quality of Life

Studies have shown that individuals who engage in resistance exercises tend to live longer and experience a higher quality of life compared to those who do not. By maintaining muscle mass, bone density, cardiovascular health and metabolic function, strength training enables individuals to remain active and independent as they age. The ability to perform daily activities without limitations contributes to a better quality of life and overall well-being.

10. Customizable and Adaptable for All Fitness Levels

Whether using bodyweight exercises, resistance bands, free weights or machines, strength training can be modified to suit any fitness level or physical condition. Beginners can start with basic movements such as squats, lunges and push-ups, while more advanced individuals can incorporate heavier weights and complex exercises. Furthermore, strength training can be adjusted to accommodate individuals with specific goals, whether it be muscle building, weight loss, rehabilitation or athletic performance.

Strength training is a powerful tool for improving physical health and overall well-being. From increasing muscle strength and bone density to boosting metabolism, reducing injury risk and enhancing cardiovascular health, the benefits of resistance training extend far beyond aesthetics. It is a lifelong practice that promotes longevity, independence and mental well-being. Whether you are a beginner or an experienced athlete, incorporating strength training into your routine can lead to significant health benefits, helping you live a stronger, healthier and more fulfilling life. ■

Note: Before beginning any new strength training or exercise program, it's important to consult with a health care provider to ensure it is safe and appropriate for your individual health needs and fitness level.

Leveraging Translational Research to Strengthen Health Systems Worldwide

MARIE PAUL NISINGIZWE, MSc, PhD

Marie Paul Nisingizwe, MSc, PhD, is a health services and policy researcher with more than a decade of experience in health systems research, global health and quantitative methods. Her research focuses on global health system inequities and the effect of these inequities on access to health services and outcomes for underprivileged communities.

Nisingizwe has previously worked with several international organizations, including the World Bank, USAID, Partners In Health and the Clinton Health Access Initiative (CHAI) across 15 countries. Nisingizwe's expertise spans impact and process evaluation of health system-strengthening interventions, particularly in maternal and child health and infectious diseases. She holds a PhD in population and public health from the University of British Columbia and a master's in applied statistics. A recipient of both the Harvard School of Public Health McGoldrick Fellowship and the World Bank Group Fellowship, she is deeply committed to improving health outcomes for underprivileged communities in low- and middle-income countries (LMICs).

AABB NEWS: CAN YOU TELL US ABOUT YOUR BACKGROUND AND HOW YOUR WORK IMPACTS THE FIELD OF TRANSFUSION MEDICINE?

> “By leveraging innovative solutions, we can bridge critical gaps in health care delivery and ensure equitable access to life-saving interventions.”

Nisingizwe: My background is in health systems research, with a strong focus on improving access to care for people in LMICs. I am deeply passionate about using my research and quantitative skills to inform policy and drive meaningful change.

One of my key projects examined the impact of drone technology on blood delivery in Rwanda. The findings demonstrated that drones could significantly improve access to blood, particularly in emergency situations and remote areas. They also showed that at 12 months, there was a 67% reduction in blood product expirations at the intervention health facilities. This evidence influenced the Rwandan government to expand drone-based blood delivery services and inspired other countries with similar health care challenges to explore this technology.

This advancement represents a major step toward reducing preventable deaths due to a lack of timely access to blood, especially for underserved communities in remote regions. By leveraging innovative solutions, we can bridge critical gaps in health care delivery and ensure equitable access to life-saving interventions.

AABB NEWS: HOW HAVE YOUR RESEARCH INTERESTS IN HEALTH SYSTEMS, INFECTIOUS DISEASES AND IMPACT EVALUATION INFLUENCED THE DIRECTION OF YOUR CAREER?

Nisingizwe: My interest in improving access to health care services for underprivileged communities drove me to specialize in health systems research. I grew up in a low-income country where people die daily because of inequities in health care systems. These experiences inspired me to learn and use my knowledge to help address health inequities through research. My current research focuses on global inequities in access to health care and medicines and how novel technologies can be used to improve access to care and medical products, especially for minority and underprivileged communities that live far from health facilities. These interests have played a pivotal role in shaping my career by driving my focus on evidence-based policy and program evaluation.

With a background in population and public health and statistics, I have always been interested in understanding how health systems can be optimized to improve access to care, particularly for vulnerable populations. One of my research papers, recently published in the *Lancet Global Health*, investigated the effect of drone delivery on blood product delivery time and wastage in rural Africa. This study—the first to assess the effectiveness of drone delivery in African settings—was featured in *Wired* magazine and received recognition as one of the top 12 groundbreaking studies in 2022 at the School of Population and Public Health at the University of British Columbia. Similarly, my work in evaluating hepatitis C testing and treatment programs highlights global disparities in access to hepatitis C drugs, where developed countries have significantly higher access compared to LMICs, despite the higher disease burden in these regions. This work has given me the opportunity to draw attention to the persistent challenges that hinder progress toward global elimination targets.

These experiences have reinforced my commitment to translating research into actionable policies and system-wide improvements. As a result of my work, I have had an opportunity to contribute to global health initiatives through my work with international organizations such as the World Bank, where my work focused on improving maternal and child nutrition in sub-Saharan Africa. I also contributed to policy development to guide the future of medical work in this region. I have also previously worked with Partners In Health (PIH) and the CHAI, which aim to bring modern medical treatment to vulnerable communities. Integrating impact evaluation methods and knowledge translation, I strive to ensure that health interventions are not only effective but also scalable and sustainable, ultimately contributing to stronger health systems and better health outcomes globally.

AABB NEWS: WHAT IS THE MOST IMPORTANT RESEARCH IMPACTING YOUR WORK TODAY?

Nisingizwe: Now that we have established that drones have the potential to transform last-mile supply chain issues in LMICs, we are now investigating the impact on health outcomes and once that’s established, we will assess whether this intervention is cost-effective. By using routinely collected administrative data, we can provide rigorous answers to these important questions specifically assessing how improvements in access to blood using drones might

have affected health outcomes such as post-partum hemorrhage, referrals and mortality due to lack of blood components, especially in emergency cases. Additionally, while drone technology has addressed some of supply chain challenges, it is important to assess the implications of cost, especially for limited-resource settings.

AABB NEWS: HOW CAN THE GLOBAL BLOOD COMMUNITY ADDRESS DISPARITIES IN BLOOD SAFETY AND QUALITY ACROSS DIFFERENT REGIONS?

Nisingizwe: In remote areas, lack of cold storage leads to high spoilage and wastage of blood products. In some sub-Saharan settings, an estimated 25–40% of temperature-sensitive medical supplies (including blood units) sent from urban centers to rural clinics are wasted due to breaks in the cold chain. Improving infrastructure is a priority, for example, providing solar-powered blood refrigerators and reliable electricity in rural health facilities to keep blood at safe temperatures. Training staff in proper handling and stock rotation is equally important. Additionally, adopting the use of novel technologies such as drones would tremendously improve supply and quality of blood across regions. Overall, investing in the cold chain (from blood centers to transfusing facilities) ensures that blood retains its quality by the time it reaches patients, thereby both improving safety and reducing shortages due to waste.

AABB NEWS: WHAT POLICIES OR PROGRAMS HAVE YOU FOUND TO BE MOST EFFECTIVE IN IMPROVING ACCESSIBILITY TO BLOOD SUPPLIES IN LOW- AND MIDDLE-INCOME COUNTRIES/BLOOD DESERTS?

Nisingizwe: Optimizing logistics can dramatically improve timely access to blood in remote or underserved regions. Integrated national or regional blood service networks help move blood from where it's available to where it's needed most, preventing stockouts. A critical role of regulation is to guarantee equitable access so that a safe blood transfusion is available not just in major cities, but also in rural health facilities. Policy makers can direct investments to underserved areas (e.g., setting up blood banks in every province, or funding transport for blood to remote hospitals).

Rwanda can be used as an example, where the use of drones to deliver blood was made an official part of its blood distribution strategy, ensuring even the most isolated communities are covered. In practice, this means establishing regional blood hubs that supply satellite hospitals and using data to redistribute blood units before they expire. Where services are fragmented (each hospital running its own blood bank in isolation), there is often urban-rural disparity in quality and access. Overall, streamlining the supply chain from donor to patient ensures that blood is collected in a timely manner, stored safely and delivered where needed without delay.

Nisingizwe with her mother in Kigali, Rwanda.

AABB NEWS: WHAT ARE THE KEY FACTORS THAT HINDER THE IMPLEMENTATION OF SUSTAINABLE BLOOD DONATION SYSTEMS IN RESOURCE-LIMITED SETTINGS?

Nisingizwe: The blood donation systems in resource-limited settings are hindered by several key factors, including low voluntary donor rates, weak regulatory frameworks and financial constraints. Many low-income countries struggle with low voluntary blood donation rates often due to cultural beliefs, misinformation and reliance on family/replacement donors to contribute to frequent shortages. The absence of consistent screening for transfusion-transmissible infections compromises blood safety. Financial constraints also limit investments in critical blood transfusion services, including trained personnel, equipment and testing facilities, making many blood banks under-resourced. Furthermore, the lack of digital inventory systems and data-driven management prevents efficient tracking of donors where needed.

AABB NEWS: WHAT ARE THE PRIMARY BLOOD SUPPLY CHALLENGES THAT LMICS FACE COMPARED TO HIGH-INCOME COUNTRIES?

Nisingizwe: LMICs face significant

challenges in maintaining adequate and safe blood supplies compared to high-income countries. A critical issue is the disparity in blood donation rates; high-income countries have a higher rate of donation compared to LMICs. This shortfall is exacerbated by a reliance on family/replacement and paid donors in many LMICs, which can compromise blood safety. These challenges are further compounded by inadequate blood bank infrastructure. Many low-income countries lack adequate refrigeration and storage facilities for blood, leading to spoilage and wastage. Blood products, particularly platelets and plasma, require strict temperature control and reliable electricity, which can be a challenge in remote areas of LMICs compared to high-income countries. Further, in rural and remote regions, poor road infrastructure and unreliable transportation make timely blood delivery difficult. Emergency deliveries may take hours or even days, reducing the effectiveness of blood transfusions, limited resources and fragmented blood transfusion services. Lastly, many low-income countries allocate limited funds to blood transfusion services compared to high income, leading to shortages in test kits, equipment and human resources. Without sustainable funding, blood programs cannot expand.

Nisingizwe and her mentor Dr. Bethany Hedt-Gauthier (far right) with friends reconnecting in Vancouver, Canada.

***AABB NEWS*: WHAT IS THE BEST DECISION YOU HAVE MADE ABOUT YOUR CAREER?**

Nisingizwe: One of the most pivotal decisions in my career was to focus on health systems research, leveraging my background in population and public health and statistics to address systemic health care challenges. Driven by personal experiences growing up in a country with health care access challenges, I was determined to apply my knowledge to make a tangible impact on underserved populations. Transitioning from a bachelor's degree in mathematics to specialized training as a statistician, I recognized the power of data-driven insights in shaping effective health interventions. This journey has been profoundly rewarding, allowing me to contribute to solutions that improve health care delivery and outcomes in resource-limited settings.

***AABB NEWS*: IN HONOR OF WOMEN'S HISTORY MONTH, IS THERE A FEMALE MENTOR WHO HAD A SIGNIFICANT IMPACT ON YOUR CAREER?**

Nisingizwe: In honor of Women's History Month, I want to recognize two incredible women who have shaped my journey—my mother and my mentor, Bethany Hedt-Gauthier, PhD.

My mother (Agnes Mukamana) exemplifies resilience, discipline and determination. Despite not having access to education due to Rwanda's history, she instilled in me and my siblings the importance of learning, working tirelessly to ensure we had every opportunity to succeed. After losing my father in 1994, she single-handedly raised five children, demonstrating unwavering strength and sacrifice. Her dedication to our education and well-being has been the foundation of my success, and I am forever grateful.

I also want to recognize Dr. Bethany Hedt-Gauthier, a professor at Harvard Medical School, whose mentorship has profoundly shaped my career. We first met in 2013 when she interviewed me for my first job at Partners In Health, and she has been my guide ever since. As a fellow statistician and educator, she has played a key role in building research and statistical capacity in Rwanda. Dr. Hedt-Gauthier not only mentored me but also provided life-changing opportunities, including introducing me to a fellowship at Harvard that transformed my academic and professional trajectory. She was also a part of my PhD thesis committee, continuing to support my growth. To this day, she remains the person I turn to for career guidance.

To my mother and Dr. Hedt-Gauthier, thank you for your unwavering support, mentorship and dedication to education and empowerment. You are true inspirations!

***AABB NEWS*: (FILL IN THE BLANK) AT THE END OF A LONG DAY, I UNWIND BY_____**

Nisingizwe: Playing with my 4-year-old daughter, who is my world. ■

Volunteer Spotlight

Phil Accooe, MBA, MS, MLS(ASCP) SBB, CLS, CABP, PMP
Supervisor, Transfusion Service Laboratory
U.S. Department of Veterans Affairs
Long Beach, Calif

How long have you been an AABB member?

I have been an AABB member for about 10 years.

In which AABB volunteer activities are you currently active? In which have you participated?

I have participated in AABB's Mentoring Program as both a mentee and a mentor. I have been an abstract reviewer, and I currently review award submissions. I have served on several AABB committees, including the Continuing Education Advisory Committee, Education Advisory Accreditation Committee, Blood Banks & Transfusion Services Accreditation Committee, DEIA Task Force and AABB's Board of Directors. I have been an assessor for about 10 years now, and I currently serve as the co-chair of AABB's DEIA Committee and AABB's representative to ASCP's Board of Certification.

What motivates you to volunteer?

The primary reason is that I want to make a significant difference in the lives of both patients and the professionals that support them. I can also be a bit of an overachiever at times, and I love learning. I have learned so much in each volunteer opportunity I have participated in.

How has your volunteer work impacted your professional work?

My volunteer work has impacted my professional work immensely, and I am grateful for every opportunity that has been presented to me. I started off as a mentee in the AABB Mentorship Program just as I was taking on my position as an inexperienced laboratory supervisor. I was overwhelmed when I started the position, but my mentor gave me so much amazing advice to help me excel in that position and beyond. My experience on the AABB BBTS Accreditation Committee and my experience as an assessor have provided a level of familiarity with both accreditation and regulatory requirements that is unmatched. I am completely comfortable with external audits, inspections and surveys because of the knowledge I acquired working with AABB accreditation. The Education Advisory Accreditation Committee taught me how to build a large-scale educational program and helped me to feel more comfortable giving presentations to a large group of individuals. I was able to work with many gifted, hard-working individuals on the AABB DEIA Task Force to create the DEIA Committee (among other task force accomplishments). That experience, and my Board experience, have taught me to always keep the big picture in mind when it comes to achieving goals.

What have you learned from volunteering with AABB?

I've learned about all the resources available through AABB, and I've learned that I don't have to figure everything out on my own. There's an entire community of professionals in our field who are more than willing to help each other out. I've met many new colleagues who are now friends, and we're all working toward a common purpose. It's a great community.

And what advice would you give to someone interested in volunteering?

Just do it! There really is something for everyone, and the time you put in really will pay off. Don't be discouraged if you aren't placed on your first choice as a volunteer. Keep trying, and you'll eventually find something that works for you. The CEAC and reviewing abstracts weren't for me, and that's okay! I moved on, and I was able to have some amazing experiences as a volunteer (and I still do).

Who is your favorite musician?

That's a really hard question! I have quite a few in heavy rotation on my Spotify account. However, I'll settle on Beyonce for now since I just bought tickets to her upcoming tour, and I'm very excited for the show.

Highlights of Recent Research in Blood and Biotherapies

By Drew Case
Senior Communications Manager

Study Confirms That Covid-19 Vaccines, Past Infection Pose No Risk To Transfusion Recipient Safety

Receiving a plasma or platelet transfusion from donors who had a prior COVID-19 infection or who have been vaccinated against COVID-19 does not increase the risk of adverse outcomes, according to the results of a new study from Kaiser Permanente Northern California (KPNC). The study, published recently in *Transfusion*, found no link between these transfusions and an increased risk of thrombosis, respiratory complications or hospital mortality.

In the retrospective study, investigators analyzed data from 7,773 hospitalized adult patients who received plasma or platelet transfusions between June 2020 and March 2022 and linked donor SARS-CoV-2 infection and vaccination history with recipient outcomes. Among the 19,295 plasma units transfused, 4,993 were from vaccinated donors and 1,106 were from previously infected donors. Among the 15,167 platelet units transfused, 8,530 were from vaccinated donors and 1,368 were from previously infected donors.

The study found no association between transfusing blood components containing high levels of SARS-CoV-2 antibodies and adverse clinical events. Among 7,773 hospitalized patients, there were 251 cases of thromboses, 700 instances of increased respiratory requirements and 1,443 deaths.

The findings support previous research indicating that vaccine components do not remain in the bloodstream for prolonged periods and that antibodies generated through vaccination function similarly to those produced by natural infection. While concerns about blood safety have persisted, the study reinforces the safety of transfusions from vaccinated and previously infected donors.

"Our study is the first to link specific SARS-CoV-2 antibody data from blood donors with the patients who received their blood, and we found no evidence that patients who had received blood from a donor who had been vaccinated was affected in a negative way by that blood product," said lead author Nareg Roubinian, MD, an adjunct investigator at the KPNC Division of Research. "In fact, in many cases, the blood may have helped save their lives."

The study was supported by the National Heart, Lung and Blood Institute and conducted in collaboration with the American Red Cross, Vitalant, the Vitalant Research Institute and the University of British Columbia.

AABB Foundation Alumni Identify New Immune Response Mechanisms in SCD

A research team led by the Yazdanbakhsh Lab at New York Blood Center Enterprises has discovered a mechanism that may inform future treatment strategies for sickle cell disease (SCD). The study, published recently in *Blood*, explored the role of type I interferons (IFN-I) and B-1b cells in modulating immune responses and contributing to the production of anti-red blood cell autoantibodies in mice.

The research team was led by Karina Yazdanbakhsh, PhD, vice president and director of research at NYBCe and a 2016 AABB Foundation Hall of Fame inductee. Several AABB Foundation early-career scientific research grant recipients contributed to the study, including Yunfeng Liu, PhD (2022); Cheryl A. Lobo, PhD (2007); and Avital Mendelson, PhD (2018).

Yazdanbakhsh and her co-investigators found that SCD mice exhibited heightened immune responses to T-cell–independent antigens, resulting from an increased presence of B-1b cells. In blood samples from patients with SCD, investigators observed significantly elevated levels of B-1 cells (the human equivalent of B-1b cells) compared with healthy individuals. Further analysis demonstrated increased production of anti-RBC autoantibodies in SCD patient samples, consistent with observations in mouse models.

The study also demonstrated that IFN-I signaling played a central role in regulating these immune responses. When IFN-I activity was blocked in SCD mice, the levels of B-1b cells and anti-RBC autoantibodies decreased, suggesting a potential therapeutic approach for mitigating immune complications in patients with SCD.

"This research provides crucial insights into how the immune system functions in sickle cell disease," Yazdanbakhsh said. "By understanding these complex immune mechanisms, we can develop more targeted treatments that reduce patients' vulnerability to infections while managing immune system complications." ■

James Berger Retires From the Department of Health & Human Services

James Berger, MS, MT(ASCP) SBB, retired from his position as the senior blood and tissue advisor to the U.S. Department of Health and Human Services (HHS) Assistant Secretary of Health, Office of Infectious Disease and HIV/AIDS Policy, Division of Blood and Tissue Safety and Availability on Feb. 28. He served as the Designated Federal Officer for both the Advisory Committee for Blood & Tissue Safety & Availability and also for the Tick-Borne Disease Working Group which sunset in 2022 after providing three Congressional Reports to Congress addressing the gaps in Tick-Borne Diseases.

His previous HHS responsibility was as the acting director for Blood Safety and Availability and as the associate public health advisor for Blood, Organ and Tissue Safety Policy. Previous work experience was with the Department of Veterans Affairs as the National Enforcement Officer and as the Department of Defense Functional Manager for identifying and standardizing the blood bank software requirements that were used in the military for both peacetime and contingency operations. His first job after retiring from the Air Force was with the American Red Cross as the senior manufacturing engineer, developing and testing new products, equipment and processes. Berger's last military job was as the chief of the Air Force Blood Program, Medical Readiness Division. He was responsible for developing policies and procedures to ensure rapid expansion, mobilization, and deployment of medical resources to support Air Force contingency operations worldwide.

Berger also served on the AABB Hemovigilance Committee and the AABB Interorganizational Task Force on Domestic Disasters and Acts of Terrorism. He represented the HHS on the Disaster Task Force for 15 years.

AABB Accepting Abstracts for 2025 Annual Meeting

AABB invites members of the blood and biotherapies community to help shape the scientific content of the **2025 AABB Annual Meeting** by submitting an abstract for this year's event, to be held Oct. 25-28 in San Diego. Abstract submissions are due Monday, May 19.

Abstracts may be considered for oral or poster presentations. AABB encourages submissions from both members and non-members, with detailed guidelines available online. Submitters may update or edit their abstract throughout the submission period, even after initial submission.

Abstract Awards

To recognize excellence in research, the 2025 AABB Annual Meeting will feature several awards for exceptional abstracts.

AABB will present up to ten Outstanding Abstract Awards for Trainees, recognizing high-quality submissions based on scientific merit. Recipients will receive a $500 award and will be honored during the Plenary Oral Abstract Session. Awardees will be selected from five categories: undergraduate/nursing/medical laboratory science student, SBB student, medical/graduate student, resident and fellow/post-doctoral scientist.

Top Poster Awards will highlight outstanding abstracts in a dedicated onsite and virtual poster hall. Presenting authors will also participate in a curated poster tour, where they will give a brief presentation followed by a moderated discussion with an expert in the field.

The Best Biotherapies Abstract Award will recognize one abstract representing the highest quality novel idea in biotherapies. The recipient will receive complimentary airfare, hotel and full registration to attend the AABB Annual Meeting.

Accepted abstracts will be published in a digital supplement to *Transfusion*. Those whose abstracts are accepted must register for the meeting and present their work in person.

For additional details, including submission guidelines, visit the AABB website.

AABB Announces Business Development Director Transition

Margie Boraz retired as AABB's director of business development effective Feb. 21 following a distinguished 30-year career in sales and business development. She leaves behind a legacy of leadership, strategic growth and strong industry partnerships.

Boraz began her career in business development in 1994, promoting employee assistance programs (EAP) and human resource management consulting services to hospitals, corporations, and school districts in Missouri and Illinois. She also held key sales and business development positions at Provident Counseling before joining the blood banking community in 2001, accepting a regional recruitment position at the American Red Cross. In 2007, she became the national sales manager for MacoPharma, where she led the sales team for 10 years.

Since joining AABB in 2018, Boraz has worked closely with members and clients in transfusion medicine and biotherapies to strengthen relationships and expand AABB's reach. Most notably, she played a pivotal role in growing and establishing AABB's Corporate Partner Program into the flagship offering it is today.

"AABB's corporate partners are essential in advancing the field of blood and biotherapies, and Margie has been instrumental in strengthening these relationships," said AABB CEO Debra BenAvram. "Her leadership has made a lasting impact, and we are deeply grateful for her dedication and contributions."

As AABB prepares for this transition, the Association is pleased to announce that Barb Pumphrey joined AABB as director of business development on Feb. 24. Pumphrey brings extensive experience in sales, strategic partnerships and business development, with a strong record of driving growth and fostering meaningful industry relationships.

In her new role, Pumphrey will focus on strengthening AABB's corporate relationships, enhancing member engagement and expanding the reach of AABB's programs and services. With a commitment to advancing AABB's mission and building upon the strong foundation established by Boraz, Pumphrey is well positioned to continue driving success in business development and corporate partnerships.

CALENDAR

April

2 **Teaching Transfusion Medicine Ethics in the Laboratory, One Moral Method Framework at a Time (25EL-521)**
AABB eCast
**Registration includes access to both the live and on-demand version of this eCast.*

23 **Preparative Apheresis and Transfusion Support for Sickle Cell Disease Gene Therapy (25EL-527)**
AABB eCast
**Registration includes access to both the live and on-demand version of this eCast.*

*For further information about AABB eCasts, contact the Educational & Professional Development and Meetings Department:
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Fueling Innovative Research

The AABB Foundation supports innovation through its early-career scientific research grants, which helps to advance AABB's mission of improving lives by making transfusion medicine and biotherapies safe, available and effective worldwide. Since 1983, the Foundation's Scientific Research Grants Program has funded more than 200 investigators – many of whom are now leaders in the field.

Donate to the AABB Foundation today and join us in supporting the future of patient and donor care.

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