

ABC will be publishing a holiday version of the Newsletter next week due to Memorial Day.

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May 19, 2017

Climate Change Could Affect the Blood Supply

Earth's average surface temperature has risen about 2 degrees Fahrenheit (1.1 degrees Celsius) since the late 19th century, global sea levels have risen eight inches in the last 100 years, and record high temperature-related weather events in the U.S. have been increasing dramatically since 1950, notes the National Aeronautics and Space Administration (NASA) [website](#). Last year, 2016, was the warmest year on record, according to data from [the National Oceanic and Atmospheric Administration and NASA](#). With warmer climates and increased weather incidents, climate change effects could have massive implications for the safety and sustainability of the blood supply. Some of these implications come in the form of disease-carrying pests with two wings and a voracious appetite.

"I'm very comfortable saying the spread of mosquitoes and the diseases they can carry is linked to globalization and environmental change," said Chris Uejio, PhD, assistant professor in the department of geography and program manager in public health at Florida State University. "It's much harder to tie it to climate change itself, but we certainly know weather, climate variability and globalization are leading to the spread of some mosquito species into more urbanized areas they were not naturally found in before."

A recent study in *PLOS Neglected Tropical Diseases* (Mordecai et al) investigated temperature and the spread of Zika, dengue and chikungunya. The Stanford-based researchers found the *Aedes aegypti* and *Ae. albopictus* mosquitoes thrive within the temperature range

of 78.8 F to 84.2 F (26 to 29 Celsius) and were more likely to spread infectious flaviviruses.

"Dengue epidemics have been on the rise in the past couple decades so there's been a growing effort trying to understand why we're seeing more dengue, and what the relationship is between dengue transmission and climate," said study lead author Erin Mordecai, an assistant professor of biology in a [news release on the](#)



[study](#). "We really want to build more predictive models that take climate information and make predictions about when and where we can invest in vector control to try to prevent epidemics."

When discussing the impact of vector-borne diseases such as West Nile virus (WNV), malaria and dengue, studies have concluded that warming climates are a major environmental driver in influencing the reproduction, the intensity, and survivability of the vector (Paz 2015;

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OUR SPACE

Sameer Ughade, ABC Director of Information Technology & Business Intelligence

Ransomware that Makes Everybody Wanna Cry

Most of you are already inundated with information about this newest form of ransomware that has caused massive impact in healthcare and other operations in 150+ countries. But the purpose of this article is to highlight the importance of setting up a cybersecurity program and a plan to protect your organization and data so you are much better prepared for sophisticated attacks in future.

I understand a cybersecurity program seems like a complex and financially-demanding resource, but it is critical to *any* business' operations today—including blood centers. Because blood centers are operating with a number of financial constraints, it is even more critical to ensure continuity of blood operations in face of cyberattacks and threats. Just imagine the financial impact to the organization if operation were suspended due to a loss of critical information systems. That doesn't include any after-effects either, including loss of reputation, clients, and compliance with additional guidances from regulatory agencies. This will also have a more fundamental impact to the mission of the organization of serving local community and ultimately saving patients' lives.

Our association consists of a diverse set of organizations that vary in size and in resources—both financial and human, but implementing a solid cybersecurity program is still possible no matter what your size or finances. From a technology perspective, there are numerous tools and options available for free or even at very low costs, and naturally very expensive products as well. When reviewing processes some modifications or changes might be needed, but even those should not be labor-intensive. When reviewing resources, blood centers also have qualified internal resources within their IT departments/programs or with their external vendors/contractors that can help fill the gaps as needed. Some of the biggest challenges in implementing such a large-scale program will be to ensure adoption and adherence to follow good cyber hygiene at all levels within the organization. Executives will have to play a critical role in ensuring that such a program is of strategic and operational importance and has their support. Employee awareness and engagement through training will also be critical since they are the last line of defense against attacks. These key points, along with general security practices like: following a security standard, performing periodic risk assessments, business impact analysis, ensuring outside vendors and suppliers are patching their applications, business continuity and disaster recovery programs, and hardened information systems, are all key to ensuring that you have a solid program in place.

Maintaining a reliable cybersecurity program is everyone's shared responsibility. Just as regulators and industry partners are improving their programs, it is critical for blood centers to do the same. There is a reason why blood operators are a part of the nation's critical infrastructure and directly responsible for ensuring a safe and available blood supply—and we should not let another incident like Wanna Cry affect that goal. 💧

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ABC is an association of not-for-profit, independent community blood centers that helps its members provide excellence in transfusion medicine and related health services. ABC provides leadership in donor advocacy, education, national policy, quality, and safety; and in finding efficiencies for the benefit of donors, patients, and healthcare facilities by encouraging collaboration among blood organizations and by acting as a forum for sharing information and best practices.

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CLIMATE CHANGE COULD AFFECT THE BLOOD SUPPLY (continued from page 1)

Chiotti et al., 2002). Observational studies like those described in the book “Climate Change and Public Health” explain that during an unusually warmer summer in Europe in 2010 (higher than the 30 years prior), an unprecedented upsurge in WNV cases were reported and expanded into areas where WNV had not been reported before. The authors of the book noted the blood supply was negatively impacted due to this increase.

With rising global temperatures, increased globalization, and the expansion of mosquitoes into areas not typically endemic to them, the blood supply could see some major impact—as it did in Europe in 2010. Direct implications for blood centers could include an increase in donor deferrals and more expenses to purchase, train staff, and implement new and emerging infectious disease assays and added costs to implement such technologies as pathogen reduction systems. Blood centers already saw a glimpse of this with the Zika outbreak last year.

“Things like Zika are a good stress test to see how we respond to unanticipated stressors on the blood supply,” said Emily Blumberg, MD, FACP, director of Transplant Infectious Diseases at the Hospital of the University of Pennsylvania and vice-chair of the Advisory Committee on Blood and Tissue Safety and Availability (ACBTSA). “When you think about things like Zika and blood-borne transmission, we’re still trying to understand a lot of pathogenesis, there’s a number of issues to sort through. The challenge is we know generally where it actively exists in the population, but there are two issues to consider: one is epidemics are a moving target, they ebb and flow, you can’t be cognizant where it is at all times, and the other is the potential risk groups are changing. With Zika, people were asymptomatic and able to transmit it.”

But the spread of arboviruses are not the only concern for blood centers as we look toward a future with increased effects from climate change. In the last 365 days (as of May 17), there were over 33,000 daily heat records broken in the U.S. and over 32,000 precipitation records, according to the [National Centers for Environmental Information](#). As one can see, with climate change it’s not just about warmer temperatures, there also comes an increased number and/or strength of extreme weather-related events, including hurricanes, tornadoes, heat waves and heavy downpours, to name a few. The [National Climate Assessment](#) noted that since 1991, the amount of rain falling in very heavy precipitation events has been significantly above average, with the greatest impacts being felt in the Northeast, Midwest, and upper Great Plains – more than 30 percent above the 1901-1960 average. This has led to increased flooding, which can damage structures and also cause an increase in mosquito populations as standing water becomes more prevalent.

“With hurricanes, you don’t get a lot casualties, but they cause blood centers to put off operations so staff can go home and tend to their personal lives,” said Ruth Sylvester, ABC director of regulatory services. “This hiccup is like turning a faucet off. Once you turn it back on again, it takes time to get the flow back.”

With platelets lasting only five (to seven maximum) days, having enough inventory to supply the local area can prove a challenge. There is also the above mentioned disruption in operations and in collections as blood drives are suspended. Deliveries could be affected as well if in a flood area. Some of these lessons were learned in New York City following Hurricane Sandy. In the aftermath of the hurricane, there was not just a downtime of operations and blood drives, but also a loss of electricity and backup generators failing in New York City due to flooding. The effects resulted in a trickle-down effect on the health system, including a loss of blood products and stress to replace that which was lost.

“This is something the government agencies are very aware of and concerned about, the issues are in everybody’s minds. Unfortunately, they come at a time, when we’re still trying to understand how a reduction in blood centers will affect the blood supply. Not just reducing the number of units as the demand is lowered, but as some blood collection centers are also being purchased by others—the industry is still very much in transition,” Dr. Blumberg said.

CLIMATE CHANGE COULD AFFECT THE BLOOD SUPPLY (continued from page 3)

Lessons learned from such disasters as Hurricane Sandy and the Zika outbreak were expressed eloquently by Rita Reik, chief Medical officer of OneBlood, in [Newsletter #32 2016](#). Reaching out to different local government agencies like the public health departments and establishing a collaborative network of surveillance and proactive responsiveness will go a long way toward disaster planning now and for the future.

“Be persistent in your attempts,” said Dr. Reik. “Find out who is responsible for managing the arbovirus outbreaks and contact them directly. Volunteer to sit on their arbovirus committees and disaster planning committee. Offer to give a presentation on the role of the community blood center in protecting public health at one of their meetings. When you find the right person, they will welcome you with open arms!”

All of these climate change issues are encapsulated in sustainability issues that blood centers, related associations like ABC, and agencies like the Department of Health and Human Services are already focusing on, said Jay Menitove, MD, chair of the ACBTSA. The problem is the industry has become too reactive instead of proactive.

“When the reaper is at your door it’s a little too late,” said Ms. Sylvester. “A disaster plan is a living document and needs to be reviewed and revised at least once a year. Review your plans! It’s not the plan itself that will get you through the disaster, it’s the process of planning. No plan is perfect and you’re not going to be able to address every factor you’re going to meet, but if you plan, you can adapt and that’s what you have to do when facing disasters.”

For the immediate future, Biomedical Advanced Research and Development Authority just cut the ribbon last week at the Center for Innovation in Advanced Development and Manufacturing (CIADM), one of three centers designated by HHS to provide advanced development and manufacturing of medical countermeasures to support the U.S. government’s national security and public health emergency needs. The CIADM will be operational come 2018, said the [press release](#). While changes are unfolding at perhaps a more rapid pace than [previously considered](#) in regards to climate change, the short term plans seem to be collaboration with state agencies, reviewing and discussing disaster plans, and maintaining awareness of what is coming down the pike.

“Based on the past 15 years, we’re in for some sort of surprise. We may not know if that may be an infectious agent or an extreme event...but there will be some sort of surprise. Whether and to what extent we’re prepared for it to respond—that is more of an open question,” said Dr. Uejio.

Citations: Mordecai E.A., Cohen J.M., Evans M.V., *et al.* Detecting the impact of temperature on transmission of Zika, dengue, and chikungunya using mechanistic models. *PLOS Neglected and Tropical Diseases*. April 27, 2017. <https://doi.org/10.1371/journal.pntd.0005568>.

Paz S. Climate change impacts on West Nile virus transmission in a global context. *Philosophical Transactions B*. April 5, 2015. DOI: [10.1098/rstb.2013.0561](https://doi.org/10.1098/rstb.2013.0561).

Fenech A. and Chiotti Q. The Effect of Climate on the West Nile Virus in Ontario. Integrated Mapping Assessment. 2012. http://projects.upei.ca/climate/files/2012/10/Book-3_Paper-2.pdf.

Chiotti, Q., Fenech, A. and Liebowitz, M. The threat of West Nile virus in Ontario: out of the blue or predictable? Presentation at the 2002 Canadian Association of Geographers Annual Meeting, Special Session on Integrated Mapping Assessment Project (IMAP). University of Toronto. May 30, 2002. ♦



America's Blood Centers[®]
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INSIDE ABC

The programs and services described in the Inside ABC section are available to ABC member blood centers and their staff only, unless otherwise specified.

Congratulations to the ADRP Awards of Excellence Winners

ADRP, an international division of America's Blood Centers, honored blood banking professionals and volunteers with *Awards of Excellence* at its Annual Conference held in Chicago, Ill., on May 3, 2017. Each year, time is set aside at the ADRP Annual Conference to honor individuals, groups and organizations that have demonstrated outstanding service, accomplishments or leadership in the blood banking profession. Award winners received a complimentary registration to the ADRP conference, a commemorative award and recognition on the [ADRP website](#) and in the association's newsletter, the Drop. The awards and winners this year were:



Donor Recruiter of the Year winner

Clinton McCoy, Carter BloodCare in Bedford, Texas.

The Donor Recruiter of the Year Award was established in 1982 to recognize an outstanding donor recruiter in the blood banking industry. Mr. McCoy has successfully used his customer service and sales skills to cultivate new sponsor organizations and build strong productive relationships with drive coordinators. In his first two years at Carter BloodCare he increased unit collections from his predecessor by 14 percent. And in the past three years, he secured 66 percent of all new accounts in central Texas. He also led grass-roots campaigns educating blood drive coordinators on supporting

community hospitals during typically tougher collection periods.

Rolf Kovenetsky Leader of the Year winner

Susan Matsumoto, Canadian Blood Services.

The Rolf Kovenetsky Leader of the Year Awards were established to recognize outstanding supervisors, managers or directors in both recruitment and collections. Ms. Matsumoto has been with Canadian Blood Services (CBS) for 17 years in a variety of roles. She currently manages over 90 staff members across three provinces and sat on 10 project working groups just this last year. Ms. Matsumoto has helped to collect over 257,000 units of plasma, more than 81,000 platelets and over 2.3 million units of whole blood for CBS. Her greatest gifts, say her team members, is her power to convey sincere messages no matter what the context.



Media Partner of the Year winner

AZTV7/Cable 13, Nominated by United Blood Services, Southwest Division in Arizona.

This award recognizes the support of media in recruiting donors. Recruiters and representatives of the media work in concert to educate the public of the daily need for donors of all types. This year's award winner was nominated by United Blood Services Southwest Division. During the last four years, the independent

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INSIDE ABC (continued from page 5)

news station has partnered with UBS on 15 campaigns or events to increase blood donations. Their support has helped attract hundreds of thousands of donors over the years for such programs as the Summer Drive to Save Lives. During this campaign the station ran monthly live segments featuring blood recipients and donors as well as airing public service announcements for three months that helped attract over 181,000 donors.

Humanitarian Service Award winner

Storm Bratchett Memorial Blood Drive, Nominated by Hoxworth Blood Center in Cincinnati, Ohio.

The Humanitarian Service Award recognizes a community organization that encourages the spirit of volunteerism. Nominees may include a civic or faith group, or a partnership focused on special recruitment efforts such as minority, youth or O negative recruitment. Nominated by Hoxworth Blood Center, Storm Bratchett Memorial Blood Drive is a blood drive that turned a personal tragedy into a selfless act of support for the community. Storm Bratchett, a 17-year-old Portsmouth High School senior was tragically killed in 2008 when his friend accidentally shot him in the chest with an arrow. Mr. Bratchett's mother, brother-in-law Josh, and sister Rachel, organize the drive each year with Christ's Community Church, Southern Ohio Medical Center, and Lifepoint Church to collect lifesaving blood products in memory of Storm. Hoxworth Blood Center noted in their submission that the blood drive embodies the true meaning of humanitarianism. The organizers have done an excellent job in bringing their community together, to not only celebrate Storm's life, but to also help to save others.

Most Creative Blood Drive winner**& Most Productive Blood Drive**

Cool Today, nominated by SunCoast Blood Bank in Sarasota, Fla. and Cincinnati Bengals, Nominated by Hoxworth Blood Center.

The Blood Drive Awards are given to organizations that establish blood donation as a priority, either within an organization or in the community. SunCoast Blood Bank nominated Cool Today, a heating and cooling company in the Sarasota area of Florida, for the Most Creative Blood Drive Award this year. Cool Today supported advertising for the SunCoast Cares Day in which six nonprofits collected not only blood but other items for those in need, including feeding the hungry and troop support to name just a few. The support of Cool Today helped to bring out quadruple the amount of a normal blood drive for SunCoast Blood Bank. The Cincinnati Bengals, nominated by Hoxworth Blood Center has hosted an annual blood drive for 15 years. The blood drive began as a one day event at the stadium and has now grown to a full week event at all Hoxworth Neighborhood Donor Centers. Eric Ball, Director of Player Relations has worked with the blood center each year in coordinating the event. He has donated blood at the drives and arranged for a player spokesperson to assist in promoting the blood drive via television and radio. The first Cincinnati Bengals blood drive registered just 67 donors. In October of 2016 the week-long event registered 2,323 donors.

School Blood Drive winner

Highland High School, Nominated by United Blood Services, Southwest Division in Gilbert, Ariz.

The School Blood Drive Award is given to a high school or college that has shown an exceptional commitment to establishing blood donation as a priority among its students. This year's award goes to Highland High School. During 2016, Highland scheduled 1,254 donors from an eligible population of about 700 seniors. That culminated in 578 whole blood donations and 167 double red cells, achieving 103% of their goal. Out of the 174 schools participating in the UBS Arizona High School Challenge program, they have collected the highest total number of donations of any high school in Arizona for the last eight years, resulting in more than 9,945 donations since their program began.

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Donor Collections Team Member of the Year winner

Ricardo Corpus, South Texas Blood & Tissue in San Antonio, Texas.

The Collections Team Member Award was introduced in 2013 to recognize the valuable role collections plays in the donor experience. Mr. Corpus has been with the South Texas Blood & Tissue Center (STBTC) for nearly 10 years. He began as a Technician I and progressed to Technician III. As a Technician III, Mr. Corpus not only has taken on the responsibilities of his position, but he also serves as a team leader on mobile drives, supervises other technicians, ensures donations are accounted for, and carefully ships products to STBTC labs, occasionally drives buses and most importantly ensures the comfort and safety of donors.

To motivate his team, he holds morning meetings to clearly convey important information. He has received several recognitions during his tenure at STBTC, including the 10 Years of Service Award in 2016. Mr. Corpus also has consistently maintained a whole blood first-time-right rate of over 97 percent; double red blood cell conversion rate of 99 percent; double red blood cell first-time right rate of 98 percent; and team leader conversion rate for blood drives of 25 percent.

Ronald O. Gilcher, MD, Lifetime Achievement Award winner

J. Daniel Connor, Blood Systems, Inc. in Scottsdale, Ariz.

The Ronald O. Gilcher, MD, Award was established in 2004 in honor of the former President, CEO, and Chief Medical Officer of the Oklahoma Blood Institute and honors a senior executive who has made significant contributions to the industry both within his/her organization and in wider capacities. This year the award was presented by John Hagins, president and CEO of Community Blood Center in Appleton, Wisc., to Mr. Connor, retired CEO of Blood Systems. A CPA, he began his blood banking career in 1973 as administrator of North Suburban Blood Center, also in Chicago. He is a past president of AABB and serves on the National Blood Foundation Board of Directors. Mr. Connor has a long history of support for ADRP as a keynote and guest speaker, and has encouraged his staff at Blood Systems to join ADRP as volunteers and attendees. Under his leadership, Blood Systems has grown as a leader in the transfusion medicine industry. Mr. Connor has been an inspirational leader for his colleagues, donor recruitment and collections professionals, as well as blood drive coordinators and the blood donors as well.



ADRP's awards committee selects winners from nominations submitted by current ADRP subscribers. ADRP award nominees came from blood centers and blood-collecting organizations around the world. 📌

ABC Calendar of Events

ABC offers a variety of meetings, workshops and virtual opportunities for education and networking as well as participation in ABC business. The [calendar of events](#) includes annual and summer meetings, board meetings, workshops, and webinars, and details will be updated as confirmed. We look forward to your support and participation! Non-members can [click here](#) for available opportunities.



RESEARCH IN BRIEF

A Dutch study found patients most likely to have transfusion-related lung injury (TRALI) are not being reported to the blood centers. Many TRALI cases are associated with donor antibodies to human leukocyte antigens (HLA) or human neutrophil antigens, mostly from multiparous females. The presence of sepsis was associated with non-reporting of TRALI cases to the blood bank, suggesting hospital personnel ascribe to a “one-hit” theory where antibodies are key. This study supports an association of antibodies and cognate antigens after a predisposing “second hit,” such as sepsis, that is followed by transfusion, which activates neutrophils and then causes TRALI. This trial collected 129 questionnaires from practicing transfusion medicine doctors and personnel and found similar results as that from their 2008 survey study. Sepsis was a reason for not reporting potential TRALI cases. TRALI and possible TRALI are under-recognized and the authors suggest that under-reporting is common.

Citation: Peters A.L, van de Weerd E.K., Goudswaard E.J., *et al.* Reporting transfusion-related acute lung injury by clinical and preclinical disciplines. *Blood Transfusion*. Prepublish. DOI: 10.2450/2017.0266-16.

A new clinical trial found a higher survival rate among liberally transfused septic shock patients. In a randomized double-blind, parallel-group controlled, pragmatic clinical trial at a cancer hospital in Brazil from June 2012 to May 2014, 149 patients were randomly assigned to the liberal transfusion group and 151 to the restrictive group. Patients in the liberal group received a median of one unit (0 to 3 range), versus the restrictive group which received a median of none (0 to 2 range). Hemoglobin levels were the same and there were no significant differences in Intensive Care Unit readmission rates nor length of hospital stay. After 28 days and 90 days, the mortality in the liberal group was significantly lower than the restrictive group (45 vs. 56 percent; and 59 vs. 70 percent). Limitations of the study include concerns about blinding the clinical staff, and that it was a single center study.

Citation: Bergamin F.S., Almeida J.P; Landon G., *et al.* Liberal Versus Restrictive Transfusion Strategy in Critically Ill Oncologic Patients: The Transfusion Requirements in Critically Ill Oncologic Patients Randomized Controlled Trial. *Society of Critical Care Medicine Journal*. May 2017. DOI: 10.1097/CCM.0000000000002283.

Engineered bone tissue with a functional bone marrow compartment implanted into mice achieved high donor cell chimerism. Patients needing a bone marrow transplant must undergo pre-treatment to ablate their own bone marrow for donor cells to grow. Researchers engineered bone tissue and implanted it with donor cells into mice. The engineered bone supported maintenance of donor hematopoietic cells, respond to the hematopoietic stem and progenitor cell mobilization agent AMD 3100, and yielded higher mixed chimerism in circulation of non-irradiated recipient mice compared with mice transplanted intravenously.

Citation: Yu-Ru Shiha, Heemin Kanga,b, Vikram Raa, *et al.* In vivo engineering of bone tissues with hematopoietic functions and mixed chimerism. *Proceedings of the National Academy of Sciences of the USA*. May 8, 2017 online. DOI: 10.1073/pnas.1702576114.

Researchers detected frequent and rare virus sequences after using high throughput (HTP) sequencing and metagenomics in blood products. Three hundred red blood cell (RBC) units and 300 fresh frozen plasma units that were eligible for transfusion were tested. Anellovirus, human pegivirus, human papilloma virus 27, Merkel cell polyoma virus and astroviruses were identified as were bacterial and fungal sequences. The study demonstrates the sensitivity of these advanced techniques to identify viruses and other organisms, and underlines the potential difficulties of interpretation that will arise if they identify sequences of unknown clinical significance in patients or donors said ABC Chief Medical Officer Louis Katz, MD.

Citation: Lau P., Cordey S., Brito F., *et al.* Metagenomics analysis of red blood cell and fresh-frozen plasma units. *Transfusion*. May 11, 2017 online. DOI:10.1111/trf.14148.

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RESEARCH IN BRIEF (continued from page 8)

Muscle oxygenation (MOx) measured non-invasively may aid in decisions on whether to transfuse pediatric patients. Over the last 10 years, a number of studies have investigated the risk and benefits of liberal versus restrictive transfusion protocols. In many cases, the reason to transfuse children is based on a hematocrit (Hct) threshold. In a pilot study of 16 solid tumor and leukemia patients between three and 17 years old at the Cancer and Blood Disorders Center at Seattle Children's Hospital, a non-invasive determination of MOx was performed with an optical spectrometer and transcutaneous probe. Twenty seven paired MOx and Hct measurements were made. A clear association between high MOx and high Hct values was apparent, but patients with low Hct had more variable MOx levels and therefore may not have equivalent needs for red blood cell transfusions. Larger studies will be required to validate the clinical utility of the assay.

Citation: Schenkman K. A., Hawkins D.S., Ciesielski W.A., *et al.* Non-invasive assessment of muscle oxygenation may aid in optimising transfusion threshold decisions in ambulatory paediatric patients. *Transfusion Medicine*. January 10, 2017 online. DOI: 10.1111/tme.12384. 📌

BRIEFLY NOTED

Hundreds of thousands of computers in 150 countries, including some at hospitals, were hit with the ransomware called “Wanna Cry.” The ransomware apparently used a National Security Agency-built hacking tool that was leaked to the internet in April. Possible links to the North Korean state hackers, Lazarus Group, were uncovered and announced on Tuesday. The non-profit U.S. Cyber Consequences Unit research institute estimated that total losses would range in the hundreds of millions of dollars, but not exceed \$1 billion. However, California-based Cyence, a cyber risk modeling firm, put the total economic damage—including interruptions of business operations—at \$4 billion. Microsoft released patches both before the attacks and last Friday. According to Reuters, the attackers had allegedly received just under \$32,500 in anonymous bitcoin currency as of 7 a.m. EDT on Sunday, May 14, as affected people paid the ransom to regain control of their computers. (Source: *The Hill*, [Researchers find link between North Korean hackers and Wanna Cry](#). May 15, 2017; *Reuters*, [More disruptions feared from cyberattack; Microsoft slams government secrecy](#). May 15, 2017)

The unauthorized sharing of copyrighted research papers is on the rise, fair sharing system sought. Scientific journal publishers are creating a free system in which scientists can share their copyrighted material. Millions of researchers are already using a free site called ResearchGate to share their copyrighted materials. Australian information scientists performed a random survey finding that as many as 50 percent of uploaded articles on ResearchGate were infringing upon publisher copyrights. The new fair sharing system would rely on links generated by the authors of the articles, that can be shared online-only and only the read-only versions of the articles. The articles will not be downloadable. In the future, some scientists think researchers will have more open access to share their work without threats of litigation. (Source: *Nature*, [Science publishers try new tack to combat unauthorized paper sharing](#). May 10, 2017)

Pathogen reduction technology (PRT) updates for red blood cells and whole blood use. Cerus Corporation announced on Monday that the first patient was transfused with red blood cells treated with the INTERCEPT Blood System for Red Blood Cells in Puerto Rico. The patient is part of an ongoing trial in Puerto Rico called the “INTERCEPT Blood System for Red Blood Cells in Regions at Potential Risk for Zika Virus Transfusion-Transmitted Infections” (RedeS), a randomized clinical trial.

In Ghana, Terumo BCT is providing whole blood treated with Mirasol PRT. The implementation of the Mirasol Whole Blood System is a collaborative project between Terumo and the Japan International

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BRIEFLY NOTED (continued from page 9)

Cooperation Agency (JICA). The risk of transmitting infectious diseases, such as malaria, could be reduced using PRT technology with such an implementation. (Sources: StreetInsider.com, [Cerus \(CERS\) Says First Patient Transfused in Phase III RedeS Study Evaluating INTERCEPT Red Blood Cell System](#). May 15, 2017). Ghana Business News, [Blood transfusion system in Ghana gets new phase](#). May 15, 2017)

“In August of 2016 the Mirasol PRT System for WB was approved by FDA-Ghana. And now, thanks to the support of JICA, we are able to bring the Mirasol PRT System for WB to blood centers in Accra and Kumasi. Together with a hemovigilance program, vulnerable patients will be better protected with a safer blood supply,” said Terumo President and Chief Executive Officer David Perez.

The Centers for Disease Control and Prevention announced their fully revised and updated [CDC Yellow Book 2018: Health Information for International Travel](#) is ready for purchase. The Yellow Book codifies the U.S. government's most current health guidelines and information for clinicians advising international travelers, including pretravel vaccine recommendations, destination-specific health advice, and easy-to-reference maps, tables, and charts and includes information about emerging infectious diseases, vaccine recommendations and updated guidance on antibiotic treatments for travelers.

The Yellow Book is also available online at www.cdc.gov/yellowbook. ♦

RECENT REVIEWS

One third of drugs cleared by the Food and Drug Administration (FDA) have a major safety issue occur following approval. A cohort study investigated all novel drugs approved by the FDA from 2001 to 2010 (183 pharmaceuticals and 39 biologics).—and followed up through February 2017. Of the 222 approved therapeutics, 71 of them had postmarket safety events, with three withdrawn from the market. The median time from approval to the first event was 4.2 years. Biologics were more at risk for postmarket safety events than pharmaceuticals (36.1 percent versus 29.7 after 10 years). Psychiatric drugs had the most postmarket safety events, while cancer and hematologic drugs had the fewest. Drugs approved using an accelerated review process were more likely to have a safety event after 10 years. With a current spotlight under the 21st Century Cures Act to help speed up the FDA's review process to make novel therapeutics available faster, this study could help shed light on which types of drugs should be left to study more in-depth before approval and which ones are likely to have a low incidence of postmarketing events after expedited approval.

Citation: Downing N.S., Shah N.D., Aminawung J.A., *et al.* Postmarket Safety Events Among Novel Therapeutics Approved by the US Food and Drug Administration Between 2001 and 2010. *JAMA*. May 9, 2017. DOI: 10.1001/jama.2017.5150.

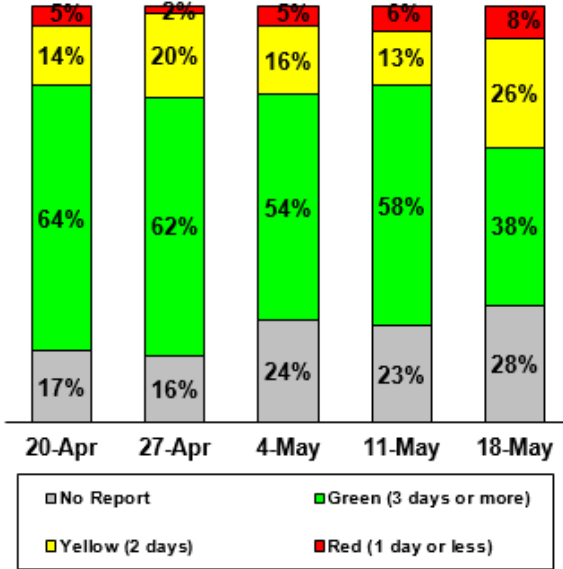
Authors in the United Kingdom describe the current status, risks, and benefits of alternatives to allogeneic platelet transfusion. Stimulation of thrombopoiesis, optimization of platelet function, and inhibition of fibrinolysis are the focus of much clinical activity. The development of modified and artificial platelet sub are described as well. The authors also stress that just avoiding transfusion is often appropriate.

Citation: Desborough M.J. R., Smethurst P.A., Estcourt L.J., and Stanworth S.J. Alternatives to allogeneic platelet transfusion. *British Journal of Hematology*. September 21, 2016 online. DOI: 10.1111/bjh.14338. ♦

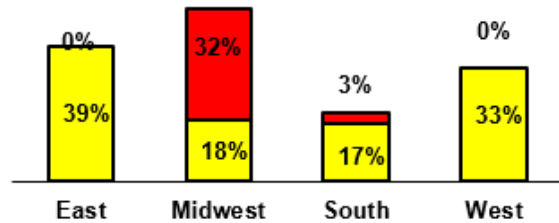


STOPLIGHT®: Status of the ABC Blood Supply

Total ABC Red Cell Inventory



Percent of Regional Inventory at 2 Days Supply or Less, May 18, 2017



Percent of Total ABC Blood Supply Contributed by Each Region
 East: 20%; Midwest: 25%; South: 24%; West: 31%

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INFECTIOUS DISEASE UPDATES



A cluster of potential Ebola virus disease (EVD) cases has emerged in the Democratic Republic of Congo (DRC). Since April 22, a total of 19 cases, including three deaths have been reported from suspected EVD. [Two samples tested positive](#) by reverse transcription polymerase chain reaction for EVD subtype Zaire. Médecins Sans Frontières (Doctors without Borders) is discussing using a potential vaccination campaign in the DRC to prevent further potential infections. Last month, a World Health Organization advisory group on immunizations recommended using the experimental vaccine rVSV-SEBOV should another EVD outbreak occur. These cases do NOT meet the definition of “widespread” as described in the recent [Food and Drug Administration guidance on Ebola](#) that would trigger responses by U.S. blood centers. ABC will continue to follow this story and report any change in that judgement.. (Source: WHO, [Ebola virus disease outbreak news](#), May 13, 2017; *Nature*, [Ebola vaccine could get first real-world test in emerging outbreak](#), May 12, 2017)

Brazil declared an end to the Zika health emergency last Friday. From January to April 2017, there were 95 percent fewer cases compared to the same interval in 2016, said the Brazilian Ministry of Health. Between January 2016 and January 2017, a total of 11,059 confirmed cases were reported in Brazil, according to the [Pan-American Health Organization](#). Brazil undertook several interventions to eradicate the *Aedes aegypti* mosquitoes, which transmit the virus, including spraying, infecting the mosquitoes with Wolbachia bacteria, and releasing genetically modified mosquitoes. (Source: *The Atlantic*, [Brazil Declares an End to Its Zika Health Emergency](#), May 12, 2017)

The Centers for Disease Control and Prevention (CDC) issued a travel advisory for the South Pacific islands of Fiji due to a dengue outbreak. The Fiji Ministry of Health and Medical Services declared a dengue outbreak after 913 cases of dengue have been confirmed from January 2017 to April 2017. Zika is a risk as well for Fiji. (Source: CDC, [Health Information for Travelers for Fiji](#))

Two people diagnosed with *sporadic* form of Creutzfeldt-Jakob disease (sCJD) who both received treatment with plasma derivatives in the United Kingdom. Both patients had been informed previously that they were at increased risk for variant CJD because of past treatment with fractionated plasma products sourced in the U.K. One patient had received numerous red blood cell, platelets and plasma transfusions for von Willebrand disease. The other patient received plasma-derived and recombinant factor IX including products from a pool that included a donor who had been diagnosed with variant Creutzfeldt-Jakob disease. Neither patient had family history of CJD. However, both cases had clinical and investigative features suggestive of sCJD. Sporadic CJD occurs at a rate of one to two cases per million population per year. Retrospective studies show no correlation between blood transfusions and sCJD and the authors note these cases could both be chance events.

Citation: Urwin P., Thanigaikumar K., Ironside J.W., *et al.* Sporadic Creutzfeldt-Jakob Disease in 2 Plasma Product Recipients, United Kingdom. *Emerging Infectious Diseases*. **May 12, 2017** ahead of print. DOI:10.3201/eid2306.161884. ♦

We Welcome Your Letters

The *ABC Newsletter* welcomes letters from its readers on any blood-related topic that might be of interest to ABC members. Letters should be kept relatively short and to the point, preferably about a topic that has recently been covered in the *ABC Newsletter*. Letters are subject to editing for brevity and good taste. Please send letters to ABC Publications Editor Lisa Spinelli at newsletter@americasblood.org or fax them to (202) 393-1282. Please include your correct title and organization as well as your phone number. The deadline for letters is Wednesday to make it into the next newsletter.



GRANT OPPORTUNITIES

Two new funding opportunities from the National Institutes of Health (NIH). NIH announced two new opportunities for research funding. The first one is the Transformative Research Award (R01), which will support individual scientists or groups of scientists proposing groundbreaking, exceptionally innovative, original, or unconventional research with the potential to create new scientific paradigms, establish entirely new and improved clinical approaches, or develop transformative technologies. The projects must have a clearly demonstrated potential to produce a major impact in a broad area of biomedical or behavioral research. Applications are due on September 15, 2017. Read more on the [Transformative Research Award](#) page and in the funding opportunity announcement (FOA), [RFA-RM-17-007](#). The other opportunity is labeled the Pioneer Award (DP1) and will be considering research reflecting substantially different scientific directions from those already being pursued in the investigator's research program or elsewhere. Applications are due on September 1, 2017. Read more on the [Pioneer Award](#) page and in the FOA, [RFA-RM-17-005](#). ♦

WORD IN WASHINGTON

A bipartisan bill to allow for expansion of telehealth services under Medicare was introduced to the Subcommittee on Health under the House Ways and Means Committee. The [Creating Opportunities Now for Necessary and Effective Care Technologies \(CONNECT\) for Health Act](#), will primarily waive restrictions around Medicare funding to help expand telehealth coverage for remote patients and restrictions on the telehealth services to be covered. An example in the bill is a Medicare beneficiary with end stage renal disease (ESRD) receiving home dialysis, may elect to receive certain required monthly ESRD-related visits via telehealth if the beneficiary receives an in-person examination at least once every three months. Supporters of the bill include the American Medical Association as well as the American Telemedicine Association. (Source: *MobiHealthNews*, [Bipartisan bill seeks to remove roadblocks to telemedicine under Medicare](#). May 3, 2017)

Kevin Land, MD, vice president of Clinical Services at the Blood Systems Laboratory, a division of Blood Systems, Inc. and an expert in IT aspects of healthcare delivery says the following.

“As a physician, I am encouraged by the bipartisan bill to remove roadblocks to telemedicine under Medicare to lower costs and increase access to care especially for Medicare beneficiaries with chronic diseases (e.g. stroke, hypertension, and mental health) who might benefit from remote patient monitoring, especially those in under-served and rural geographies.

Unfortunately, for many of us in blood banking, practicing across state lines is an increasing reality that this bill does not appear to address. While not all states require state licensure for physician to physician consultations, most states currently require active state licensure for many blood center physicians’ activities, such as holding CLIA licenses, overseeing therapeutic apheresis and stem cell collections, and dealing with donor adverse reactions.

Each state has historically managed its own medical licensing rules and application processes, which can be time consuming and costly. Fortunately, many states are beginning to join the Interstate Medical Licensure Compact (IMLC - <https://imlcc.org/>) whose primary aim is to increase access to health care by increasing license portability between states for qualified physicians who wish to practice in multiple states. So far 20 states have joined, with an additional 6 who have introduced legislation. Of course, certain fees still apply...”

-- Kevin Land, MD. ♦



REGULATORY NEWS

No reduction in staff numbers yet at the Food and Drug Administration (FDA), but a massive reorganization is underway. FDA inspectors will be specializing in certain areas covered by the agency rather than focusing on geographical regions, FDA commissioner Scott Gottlieb, MD, said on Monday in a memo Bloomberg News obtained. The reorganization is not Dr. Gottlieb's idea, it was proposed under the Obama Administration with a start date effective May 2017, but Dr. Gottlieb is supportive of the change. The refocusing "will make our field programs more modern and responsive to today's threats and challenges, while making sure that we are taking a risk-based and science-based approach to our work," Gottlieb said in the memo. "We need to make sure that we are achieving the greatest degree of consumer protection with the resources that we have." No reductions in staff are planned, said Melinda Plaisier, associate commissioner for regulatory affairs, to Bloomberg. (Source: Bloomberg News, [New FDA Commissioner Gottlieb Reorganizing Inspection Staff](#). May 15, 2017) ♦

PEOPLE



Former Food and Drug Administration (FDA) Commissioner Rob Califf, MD, was hired by Verily Life Sciences, the biotech division of Alphabet, parent company of Google. Dr. Califf stepped down in January after the new administration took over. At Verily, Dr. Califf will oversee Project Baseline, a study tracking the health of 10,000 people over four years to create a defined "baseline" of good health. He will continue to work at the Duke University's Clinical Research Institute, of which he is the founding director, and will also be an adjunct professor in the Department of Medicine at Stanford—two institutions participating in the baseline study. Califf is recognized by the Institute for Scientific Information as one of the top 10 most cited medical authors, with more than 1,200 peer-reviewed publications. He was originally appointed as Deputy Commissioner of the FDA in 2015 and then quickly nominated as the successor of

Margaret Hamburg, MD, who was the second-longest serving FDA Commissioner. Dr. Califf is a member of the Institute of Medicine (IOM). He served on numerous committees that, in part, extended Medicare coverage of clinical trials, removed ephedra from the market, and helped to create methods by which to identify and prevent medication errors. Dr. Califf is also a member of the IOM Policy Committee and liaison to the Forum in Drug Discovery, Development, and Translation. (Source: CNBC, [Alphabet hires Obama's FDA chief to help run huge health study](#). May 17, 2017) ♦

MEMBER NEWS



LifeStream honored lifelong blood donor. LifeStream recognized blood donor Everett Brittain on May 9 for becoming the 15th LifeStream donor to reach the 100-gallon milestone in donations. The Los Angeles native was surrounded by family members, including his wife of 53 years, Donna; staff; fellow blood donors; and representatives from county and state offices, during a chairside "in-donation" celebration. Rick Axelrod, MD, LifeStream's president and CEO, hosted the ceremony and related how Mr. Brittain's first, rather shaky, blood donation – made in 1962 when Mr. Brittain was just a college student. "For whatever reason, Everett was a little woozy after that first time," Dr. Axelrod said. "However, rather than be discouraged, he made a vow to himself: 'That this will not happen again!' Luckily for all those he's helped through the years, Everett stuck to his determined stance, returned to the donor's chair, and, now, 55 years later, look what he's accomplished." Perhaps inspired by their father's example, Mr. Brittain's son and daughter gave blood following the ceremony. (Source: LifeStream press office) ♦

CALENDAR

2017

June 6-8. **Technical & Quality Workshop, America's Blood Centers, Omaha, Neb.** Contact: ABC Meetings Dept. Phone: (202) 654-2901; e-mail: meetings@americasblood.org.

June 17-21. **27th Regional Congress of the ISBT, Copenhagen, Denmark.** Click [here](#) to register for the event.

July 26. **Transfusion Safety Officer & Patient Blood Management Seminars (Advanced Program), Ft. Lauderdale, FL.** If you are interested in taking part in one of these new and engaging programs, please contact: [Cathy Shea](#), Executive Assistant or call (727) 568-1151.

Aug. 1-4. **Summer Meeting, MD Workshop & Golf Tournament, America's Blood Centers, Providence, R.I.** Contact: ABC Meetings Dept. Phone: (202) 654-2901; e-mail: meetings@americasblood.org.

Aug. 4. **Board Meeting, America's Blood Centers, Providence, R.I.** Contact: ABC Meetings Dept. Phone: (202) 654-2901; e-mail: meetings@americasblood.org.

Sept. 11-12. **[IPFA/BCA 3rd Global Symposium on The Future for Blood and Plasma Donations](#), Atlanta, Ga. [Registration is open.](#)**

Sept. 27-28. **Financial Management & IT Workshops, America's Blood Centers, Houston, Texas.** Contact: ABC Meetings Dept. Phone: (202) 654-2901; e-mail: meetings@americasblood.org.

Nov. 7-8. **Transfusion Safety Officer & Patient Blood Management Seminars (Basic & Advanced Programs), Jacksonville, FL.** If you are interested in taking part in one of these new and engaging programs, please contact: [Cathy Shea](#), Executive Assistant or call (727) 568-1151.

Nov. 8-10. **10th World Federation of Hemophilia Global Forum, Montreal, Canada.** For more information and to register, click [here](#). ♦



AMERICA'S BLOOD CENTERS
TECHNICAL & QUALITY WORKSHOP
OMAHA, NEBRASKA
JUNE 6-8, 2017

Featured Topics

- HLA Testing & TRALI Mitigation
- Whole Blood – What's Old is New Again
- Cybersecurity for Quality & Technical Professionals
- Making the Leap to Process Improvement

For registration information, visit www.bit.ly/abc_meetings.
Scholarship opportunities are available to ABC members.
Sponsorship opportunities available. Contact Jodi Zand at jzand@americasblood.org for details.

Hotel Information

DoubleTree by Hilton Omaha Downtown
Hotel room rate: \$144 + tax

ABC is proud to sponsor this meeting in historic Omaha, Nebraska. We are bringing quality and technical professionals together and will provide both educational updates and an opportunity for networking. The value of different perspectives enriches this event and provides a platform for the discussion of issues that cross common boundaries.

— Louis M. Katz, MD, CMO, America's Blood Centers



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Classified advertisements, including notices of positions available and wanted, are published free of charge for a maximum of three weeks per position per calendar year for ABC institutional members. There are charges for non-members: \$139 per placement for ABC Newsletter subscribers and \$279 for non-subscribers. A six (6) percent processing fee will be applied to all credit card payments. Notices ordinarily are limited to 150 words. To place an ad, contact Lisa Spinelli at the ABC office. Phone: (202) 654-2982; fax: (202) 393-1282; e-mail: lspinelli@americasblood.org.

POSITIONS

Also available on our [website](#)

Chief Medical Officer. The Oklahoma Blood Institute, a large, innovative and quickly growing regional blood center servicing Oklahoma, Arkansas, Texas and beyond, is seeking qualified candidates for the position of Chief Medical Officer (CMO). Successful candidates will need to be board certified/board eligible physicians with significant experience in hematology, transfusion medicine, cellular therapy or related fields. This position is ideal for visionary leaders who are also comfortable in a fast-paced, results-oriented professional environment. In this role, the CMO will lead multiple physicians and a large clinical staff and will guide multiple departments, encompassing, immunohematology (with hospital transfusion services responsibilities), therapeutic apheresis, cellular therapy, cord blood, "Be The Match" (registry and harvest), donor research, and other activities. If you are an outgoing, forward thinking doctor with these qualifications and are looking for a position that has direct impact on patient care and donor health we would like to hear from you. This is your opportunity to shape initiatives that will improve transfusion care, cell-based therapeutics, community health, and research infrastructure on regional, national and international levels. Visit www.obi.org for a preview of your future. Please apply in confidence by emailing your CV to jo-seph.mcneil@obi.org, or fax to (405) 278-3150.

Immunohematology Reference Laboratory Specialist. The Central California Blood Center, located in Fresno, is seeking an Immunohematology Reference Laboratory Clinical Laboratory expert. Full-time, Monday-Friday, day-shift and on call. This job includes but not limited to providing exceptional customer service to our hospitals by resolving intermediate to complex red cell antibody problems, finding compatible blood through local donor screening or networking with other blood centers IRBs and training and assessing other CLS to perform IRL testing. Additionally this job requires performance of other donor laboratory and component manufacturing tasks. The ideal candidate shall possess advanced IRL experience, great written and verbal communication skills, work expeditiously and utilize resources optimally to solve the complex patient cases. Strong working knowledge of pertinent safety, FDA regulations, and AABB standards is desired to insure regulatory compliance at all times. Qualified bachelor's degree and licensed in the state of California as a Clinical Lab Scientist, an

SBB a plus. Competitive pay and Benefit package. EOE/M/F/VET/Disability. Please click [here](#) to apply.

Phlebotomy Supervisor – Commercial Driver's License (CDL). The Institute for Transfusion Medicine (ITxM), Pittsburgh, Pa. The Phlebotomy Supervisor is responsible for daily on-site management of an assigned Mobile Unit or Community Donor Center (CDC) collection activities. The Float Supervisor functions in a leadership role coordinating, operating and evaluating blood drives and CDC's with Regional Manager. The Phlebotomy Supervisor provides back up support for screening and phlebotomy procedures, assists, coaches and monitors staff for compliance. The supervisor is responsible for monitoring technical compliance of all staff to ensure compliance and providing quality customer service. The ideal candidate must have Medical Assistant, Certified Medical Assistant, Registered Nurse, LPN, EMT, Phlebotomy certification or 1 year of phlebotomy experience, five years of relevant work experience, 1 year of supervisory or preceptor experience, and current CPR certification. Two years of experience in blood collections is preferred. Successful candidates must possess and maintain a valid Commercial Driver's License (CDL Class A or B). Must have one year CDL experience. Valid drivers' license and acceptable driving record consistent with company policy. Act 33/34/73 clearances must be obtained within 30 days of the start of employment. Competitive salary and excellent benefits. Apply directly to our website for consideration www.itxm.org.

Bio Equipment Specialist, Virginia Blood Services (ITxM), Richmond, Va. The Bio Equipment Specialist is responsible for the Mobiles and Community Donor Centers Operations quality control for equipment tracking and maintenance, and annual equipment calibration. The specialist maintains accurate records related to equipment maintenance and annual calibrations, performs scheduled quality control (QC) on all required donor services equipment, reagents and labels in an accurate and timely manner, performs validation procedures on newly acquired donor services equipment, and assists with the development of corresponding Standard Operating Procedures (SOPs). The incumbent reviews and maintains accurate and organized QC records on all required donor

(continued on page 17)

POSITIONS (continued from page 16)

services equipment, keeps accurate spreadsheets of all equipment in donor services, and notifies management when cleanings/calibrations are due. The specialist repairs donor services equipment as required. Orders replacement parts as needed. Maintains accurate inventory of equipment parts. Maintains accurate servicing instructions in addition to service manuals, as needed. Maintains documentation of repair and returns repaired equipment back to operations in a timely manner. The ideal candidate must have a High School Diploma or equivalent. Two or four year technical degree preferred. Three years relevant work experience required. Three years equipment validation and maintenance experience preferred. Competitive hourly wage and excellent benefits. Apply directly to our website for consideration www.itxm.org.

Associate Medical Director. Michigan Blood is seeking a board certified, or eligible, physician trained in transfusion medicine to serve as Associate Medical Director. Michigan Blood is an independent, nonprofit blood bank that provides blood for 75 hospitals throughout Michigan and also offers related services, including a stem cell (marrow) program, therapeutic apheresis, DNA tissue-typing, transfusion medicine consultations, immunohematology reference lab and a public cord blood bank. Michigan Blood is part of Versiti, a strategic affiliation of healthcare organizations with expertise in blood collection, transfusion and transplantation medicine, stem cell and cellular therapies, hematology, oncology, genomics and more. Located in Grand Rapids, Mich., the community of about 1.3 million fosters a unique blend of big city excitement with a small town feel. For more about the position, please click [here](#). Please send CV to Melissa Manley at melissa.manley@bcw.edu

Director of Administrative Services. Lifeline Blood Services is an independent blood center that has been serving the West Tennessee communities since 1947. Lifeline has an exciting role available for the person that likes to be challenged. The Director of Administrative Services is responsible for six staff members in three departments. This person will oversee the areas of human resources, information technology, facilities, and outsourced accounting. Successful candidates will have a bachelor's degree, master's degree preferred, contract negotiations skills, management experience, and accounting knowledge. For additional requirements and information please see job listing at www.LIFE-LINEbloodserv.org. CV or resumes may be emailed to Sheila.Bosley@lifelinebloodserv.org.

Recruitment and Retention Manager (Charlotte, N.C.) Come apply your blood banking and recruitment management experience in one of the fastest growing and best cities to live in the country! Community Blood Center of the Carolinas is seeking an experienced and analytical professional for the Recruitment and Retention Manager position in Charlotte, NC. The position is

responsible for the development and direction of programs related to recruitment and retention of blood drive sponsors and donors, in order to meet the needs of patients and hospitals in our region. This position works closely with the Director of Marketing, Recruitment and Collections to ensure efficient operation of both center and mobile whole blood, red cell, plasma and platelet collection. Supervisory, sales and data analytic skills, as well as blood bank experience highly preferred. Essential functions include, 1) implementing departmental and organizational goals by using planning and strategic agility as the foundation for successful results in meeting objectives; 2) ensuring that qualified and adequately trained personnel are available, and that company personnel policies and standards are administered equitably and consistently; and 3) leading and managing group through further development and emphasis on team building concept. Incorporates integrity and trust within group through example of leadership. Applications should send a resume to Ben Pryor at bpryor@cbcc.us or apply online at www.cbcc.us/careers. ♦