Key Issues Dialogue: von Willebrand Disease
Featuring Garrett Bergman, M.D.; Craig Kessler, M.D.; Robert Montgomery, M.D.; Ann-Marie Nazzaro, Ph.D.; Sally Owens, R.N., BSN and Paul Perreault
From left to right, Paul Perreault, Craig Kessler, Ann-Marie Nazzaro, Garrett Bergman, Sally Owens and Robert Montgomery.
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**DR. GARRETT BERGMAN:** Thank you for taking the time this morning to discuss topics of importance to all of us: von Willebrand disease, Project Red Flag and the recently published National Heart, Lung, and Blood Institute (NHLBI) guidelines on the diagnosis, evaluation and management of von Willebrand disease. The discussion will be structured in three parts. The first part will be dedicated to the National Hemophilia Foundation (NHF) and how the organization embraced von Willebrand disease as an allied disease to its primary focus of hemophilia. The second part focuses on Project Red Flag, the NHF’s public awareness campaign on bleeding disorders in women, now in its tenth year. And the third part addresses the NHLBI guidelines.

**The National Hemophilia Foundation Initiative at Ten Years**

**GARRETT:** It’s been approximately ten years since the National Hemophilia Foundation included von Willebrand disease in its mission along with hemophilia and other bleeding disorders. To what extent would you say the effort has been successful in expanding the scope of interest?

**ANN-MARIE NAZZARO:** At the launch of the NHF’s initiative focusing on women’s bleeding disorders it was decided we should have a strong focus on von Willebrand disease (VWD). The reason was that many women are affected by VWD, and the consequences can be far worse than for men. The effort has been to bring women with VWD into NHF and hemophilia treatment centers. First, we wanted to achieve more accurate diagnoses, and, along with that, proper treatment and management of VWD. I can attest to the efficacy of this effort by two indicators. The first is we tracked the increase in women being seen at the federally funded hemophilia treatment centers and that number is almost two and a half times what it was ten years ago. The second indicator is the number of local NHF chapters that have engaged women through community outreach. Among 48 chapters, and about six independent local associations, nearly 40 have a women’s initiative. We can say that in the bleeding disorders community, von Willebrand disease has become a household term.
GARRETT: Craig, what was the role of the Medical and Scientific Advisory Committee (MASAC) of the National Hemophilia Foundation in affecting these advances?

DR. CRAIG KESSLER: Over the 10 years, MASAC endorsed the highest standards for care of patients with VWD. The efforts of Project Red Flag, the CDC and the NHLBI have all solidified the concept that the physicians who take care of people with hemophilia also take care of people with VWD. This is extremely important from a patient care perspective. It is also important because it spreads the word that hematology is a subspecialty within internal medicine and pediatrics and that hematology is essential to the treatment of bleeding disorders. It confirms the significant differences between oncology and hematology. Yet, the majority of hemophilia patients, including the majority of VWD patients in this country, get their primary care for bleeding disorders from a hematologist/oncologist where the H is small and the O is large. We need to emphasize the importance of understanding how to treat VWD. We also need to underscore the importance of the hematology part of hematology/oncology on the adult side. On the pediatric side, most patients with clotting disorders are eventually treated at a tertiary care center. However, the first treatment for most women and men who present with VWD is not at a tertiary care center. Usually the diagnosis of an adult patient is made because of bleeding associated with surgery or complications from injuries. As an adult hematologist/oncologist, I get frequent calls from physicians seeking advice on how to care for a VWD patient who is often just about to undergo surgery.

SALLY OWENS: At the CDC, we have made an effort to approach medical students and fellows when they’re still open to new ideas on these issues. We were able to have some questions about VWD included on the students’ exams. It gets young doctors to think about the disease.

Project Red Flag

GARRETT: Project Red Flag has been a true collaboration between the NHF, CDC and CSL Behring. What are the issues that we can expect to be addressed in the next ten years?

SALLY: At the beginning of Project Red Flag, the CDC went directly to women and talked with them. We found that by the time most of these women were diagnosed there was an average of 16 years between the onset of bleeding symptoms and a diagnosis. That is just not acceptable. We could also do a better job of taking comprehensive family histories to learn if relatives have had bleeding disorders. A universal data collection system for females is being developed at the treatment centers.
ANN-MARIE: For Project Red Flag, we want to focus on adolescents and young women at the beginning of the next 10-year timeframe. This way, we can work harder to get these young women diagnosed earlier.

GARRETT: Paul, could you speak about the role industry plays in helping to spread the word?

PAUL PERREault: From an industry perspective, continuing support of Project Red Flag is extremely necessary. Industry plays a global role in spreading the word and offering help with awareness and diagnosis. Altogether, it’s a challenging continuum because physicians treating the general population say they don’t see von Willebrand patients in their offices. The relevant question is: Do they administer the appropriate tests? All indicators suggest they do not. From an industry perspective, we have to continue to push harder with the messages around what needs to be done to facilitate diagnosis and treatment.

The awareness part is also important. Patients typically know a great deal from accessing information on the Internet. With women the complications can be serious, but I also want to make sure that we’re not overlooking the males with VWD.

ROBERT MONTGOMERY: There’s no question that the adult female population is the primary group at risk. However, we also need to recognize that for every female with VWD there is a genetically related male who is equally capable of transmitting the disorder to children. I think that participants in Project Red Flag should be asked if their children have been tested.

CRAIG: A major issue is that VWD has always been considered a rare bleeding disorder, and it is not rare. The sooner we recognize that it is not rare, the more funding and the more awareness we’ll have within the general population. VWD occurs in one to two percent of the population. There are very few other diseases in the general population with that high an incidence. When we remove it from the category of a rare bleeding disorder, it is more likely VWD will be placed in medical school curricula. Then, more physicians will be trained to look for it.

ROBERT: I am concerned that based on laboratory tests, 37 percent of those tested for VWD may be normal from a genetic perspective, but they may not be normal on a level that’s necessary to prevent full symptoms. An individual with low von Willebrand factor could be considered normal but that does not necessarily mean the person should not be treated.
GARRETT: *So the gauntlet has been thrown down today and it’s clear that our work is cut out for us in the next 10 years.*

CRAIG: We should also further study the relationship between ethnicity and VWD. Many have erroneously assumed it is an equal-opportunity genetic disease. Yet Dr. Montgomery’s group has important data that shows a significant number of African-Americans are diagnosed with VWD but actually do not have it, or may have a different bleeding disorder.

ROBERT: The CDC has shown that, as a group, African-Americans, have higher normal von Willebrand factor levels than Caucasians. That may be protective from symptoms but not necessarily from genetic transmission.

SALLY: In terms of women with bleeding disorders, we’re seeing the same percentage of symptoms among African Americans as in Caucasians. However, this does not mean the specific bleeding disorders have been accurately diagnosed. We need to use our organized network of treatment centers to collect more data. Otherwise, it would be a missed opportunity.

GARRETT: We’ve identified a number of areas where we can advance our understanding of VWD. These changes include policies regarding insurance reimbursement for follow-up care, family studies and genetic studies. This leads to the critical role of advocacy. What are your suggestions about where Project Red Flag should put its efforts over the next 10 years?

ANN-MARIE: In the next 10 years we need to expand our outreach to the media. With CSL Behring’s support, we’ve been able to work with 18 key NHF chapters across the country and identify media markets in those areas. In each market, we’ve enlisted the help of a female spokesperson with VWD and also a physician spokesperson. We’re knocking down barriers and we’ve been able to get media play in newspapers and television stations in many of those markets. Increasing media is the only way we’re going to reach out to the one or two percent of the population with VWD. This way we will be able to help more women with menorrhagia whose symptoms have been vetted through information provided by NHLBI, CDC, Project Red Flag and MASAC. If Project Red Flag wants to reach adolescents and young women, we will need to become more Internet savvy.

SALLY: Some of the words we use in our public messages need to be changed to better reflect how people think and speak. When people search for information online they use simple words such as “heavy periods.” We need to use words that will connect people to the information about bleeding disorders they are seeking.

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Based on laboratory tests, 37% of those tested for VWD may be normal from a genetic perspective, but they may not be normal on a level that’s necessary to prevent full symptoms. An individual with low von Willebrand factor could be considered normal but that does not necessarily mean the person should not be treated.
ANN-MARIE: At the beginning of our Project Red Flag campaign, we were able to get a placement on the very popular 4women.gov Web site with a Q&A on women’s bleeding disorders. We also did informational brown bag lunches in government office buildings that were very well attended.

PAUL: We could take a lesson from CSL Behring’s experience. The example of primary immune deficiency comes to mind. This entailed a successful collaboration between CDC, industry and the Jeffrey Modell Foundation to put together a public awareness campaign. Tens of millions of dollars in free media are available through public service announcements. I agree that this is the right time to offer public service announcements about VWD to television stations and I think we could do more with this. The stations are looking for new material that goes beyond the more well known diseases.

CRAIG: We need a big splash of public relations. As I’ve found in other areas, the best way to increase public awareness is to have an articulate spokesperson who is comfortable on TV.

ANN-MARIE: NHF has come up with something quite revolutionary. We’re looking to create a separate entity, still linked to NHF, and called something like The Women’s Health and Bleeding Disorders Institute. The new name would be placed on a banner on the Web site. The overall umbrella would start with “women’s health and bleeding disorders” and from there a person could search for specific bleeding disorders or for information on heavy periods. If a person has bleeding symptoms, this is the way they might think—search women’s health first, then bleeding disorders. These broader key words will be helpful in driving women to the information they need.

SALLY: In some ways, the women we serve have already confirmed the need to raise awareness about programs by rebranding the names. In fact, when we interviewed 75 women who were referred to CDC from the hemophilia treatment centers, over 90 percent said they were satisfied with their treatment. But close to 80 percent didn’t know they were seen by a hemophilia treatment center.

Another question we are asking is: Should it only be the people who have a laboratory diagnosis that we’re helping? Should it be anyone who has a bleeding symptom, or are we here for people who have a diagnosis?

GARRETT: For adolescents who are experiencing their first symptoms, Project Red Flag is focused on the Internet. Perhaps we should ask the younger generation to tell us which tools would give us the best and most effective communication with their age group.
**CRAIG:** An innovative program might be to educate adolescent girls about what is a normal period and when bleeding is considered excessive and may need to be evaluated.

**ANN-MARIE:** Part of our focus at NHF for the next two years is having a presence in the school systems. We helped to develop a curriculum for school health educators at the middle and high school level, and we plan to distribute this as much as we can across the country. We’re piloting it in three school districts. The title of the curriculum is, “Anyone Can Have a Bleeding Disorder.” This way both boys and girls will learn about von Willebrand disease and other blood disorders. We also plan to do a family genealogy exercise to help participants to understand the importance of family history.

**National Heart, Lung and Blood Institute Guidelines**

**GARRETT:** Let’s discuss the NHLBI guidelines. Why do you think this report was such a high priority for the National Institutes of Health (NIH)?

**ROBERT:** I think it was because there was insufficient knowledge on the topic of bleeding disorders. I also think it was a combination of pressure from physician groups and from industry.

**CRAIG:** The NHBLI guidelines are the most important work that has been published while I’ve been working in hematology. The guidelines were a priority because it is critical to have a way of standardizing patient care and for government and reimbursement agencies to have these guidelines available. I think the most pressing issue now is how the guidelines will be disseminated and how committed people will actually be to using them.

**PAUL:** The NHLBI should be congratulated, but the impetus for this report stems from congressional appropriations report language that we were able to obtain support for through collaboration with the patient advocacy organizations. It will also take the continued participation of everybody around the table to achieve success. It’s a matter of keeping the focus on the diseases that have not received the attention or the funding they deserve, and gathering together the appropriate people from among all the stakeholders.

From the political side we’re very active with advocacy groups and we’ve been effective in bringing people together to try to align some of the political agendas. It goes back to the issue of reimbursement. We have a lot of reimbursement expertise and we have people who are going state by state to try to educate the reimbursers about therapies for VWD. On a national level we work with various congressional committees and staff
to try to educate them. We provide the message but it takes continual effort to get people to recognize the issues. The guidelines should be helpful to the reimbursers in terms of recognizing VWD, understanding it and making sure they’ll pay attention when they see these cases come through their system. We have to have the reimbursement. We need to make sure that the access to these therapies is there so we spend a lot of effort in that area. We’ll take on the challenge to continue to push these agendas because it’s in the best interest of the patients.

CRAIG: CSL Behring is the only industry partner committed to educating the patient population and this is critical to success. I hope you continue your efforts.

ANN-MARIE: At NHF, we joined with CDC in advocating for the publication of a small pocket edition of the NHBLI guidelines for physicians. We should also look into creating a version for the people making decisions on reimbursement.

GARRETT: To what extent do you think the issuance of the NHBLI guidelines will help to increase patient referrals?

CRAIG: The guidelines are a good first step. However, I don’t think the guidelines are going to change anything immediately within the general internal medicine community. I think we could use a questionnaire like those often seen in women’s magazines. After a woman fills in one of these questionnaires with her symptoms, she would be much more likely to search for information on VWD before seeing a physician. In addition, she is more likely to raise questions about her symptoms when seeing the physician.

SALLY: We’re developing a piece that will help women to become educated enough and sufficiently prepared to discuss bleeding disorders with their physicians.

CRAIG: The emphasis should probably be not only on the physician, but also on the nurses and physician assistants. I am an advocate of finding opportunities to promote a mindset where every individual who presents with excessive bleeding or bruising is screened for a bleeding disorder. I would like to see the application and validation of some of the scoring mechanisms that are being developed. I think it would also be a good idea to develop a central laboratory to help with making diagnoses. We could develop a project that would show the cost-effectiveness of medical care for VWD over years for both men and women. We’ll need evidence-based outcome measurements. I recommend bold moves by Project Red flag, NHF and CDC.
ROBERT: It’s important to remember that before a girl gets her first period she still has VWD. As we approach the topic of pre-existing conditions as a problem, it’s clear that we need to learn more from families to find out what symptoms and signs may be evident even at an early age. This could all lead to an increase in earlier diagnoses.

GARRETT: Actually making a diagnosis of von Willebrand disease is an issue that warrants discussion. It’s not as simple as taking a blood test that gives a yes or no result. What needs to happen over the next ten years?

ROBERT: Since the recognition, in the early 1970s, that von Willebrand factor is a separate molecule from Factor VIII, the search for answers has raised more questions. Even with guidelines, diagnosis can end up being more of a discussion or consensus rather than being scientifically derived. We found in our program project that a large group of patients, when studied randomly in follow-up, don’t actually have von Willebrand factors that are close to necessarily being diagnosed as VWD.

One issue is that age is associated with an increase in von Willebrand factor. Yet, we don’t know if that is because as you age, you need more von Willebrand factor. It may also be due to the fact that an increase in von Willebrand factor associated with age will also decrease symptoms. Throughout the life of a woman with VWD, as she moves from having problems with menorrhagia into post menopause, the menorrhagia will be gone, but will her surgical risks? There’s still a great deal that is not firmly established about the diagnosis of VWD. Some of the problems may pertain to the abilities of testing laboratories and the quality of the samples sent to laboratories.

GARRETT: Tonsillectomies are still a common procedure in the United States and are often the way both boys and girls with von Willebrand disease first come to the attention of physicians. Are there other areas to which we should pay particular attention?

CRAIG: I’d like to bring up another area that I was involved with several times during the past year where the lack of information about VWD was an important issue. That is the area of child abuse. A child can be hospitalized because of an intracerebral bleed after falling while playing, perhaps from something innocent such as jumping on a bed. Only later will the tests show that the child probably has VWD. Yet, when the child shows up at an ER, there may be a misdiagnosis such as shaken baby syndrome that leads to accusations of abuse against a parent. The issue of VWD is not always considered when a patient comes into the ER.
ROBERT: Clearly, information on the part of the medical staff is a major component. At our medical center, probably the most common von Willebrand screen we actually review every week is a referral from the staff that screens for child abuse.

CRAIG: You are doing a commendable job at your medical center, because it is very difficult to reverse the suspicion of child abuse once it has been labeled as abuse.

GARRETT: How would you summarize your comments about the expanded interest and attention at NHF in identifying VWD, the success of Project Red Flag and the impact of the NHLBI guidelines on advancing the care of patients?

ANN-MARIE: At the NHF, we’re pleased with the progress of the past 10 years and we are very optimistic about the years ahead. We’re excited about the new public education tools that have been developed. Clearly, the NHLBI guidelines are a major milestone, and we’re delighted to move forward with versions of both the physician and the patient guidelines. We also have Dr. Andra James’ book of 100 questions and answers about VWD and will make use of some of this material. We want to have a much more aggressive public relations campaign in the years ahead by including public service announcements and mass media, both Internet-based and traditional.

SALLY: The whole campaign and the programs have shown how fruitful it is to have a coalition of community-based organizations from within the medical community, industry and government that all work together. There are a lot of people marching to the same drummer now. Ten years ago that was not the case. Back then, public opinion even within our own community was considered to be of lower importance. To maintain this progress, we have to continue to listen to patients and be diligent about collecting data that will promote evidence-based diagnoses and care.

ANN-MARIE: Ten years ago people wondered if NHF, a hemophilia-based community of men and boys, would accept women and girls. Now, 10 years later, I am pleased to report that NHF has come so far as to be moving to change the overarching name of the program to the Women’s Health and Bleeding Disorders Institute (working title).

ROBERT: We still need to do more clinical research. This is true today even as many organizations, industry partners and patients all work to bring this issue to the national forum. At this time, most of the basic science is well-known. The clinical research is difficult but necessary. The idea that it is somehow a little brother to basic science is wrong. Today, there is a greater focus on translational research that involves both
basicscienceand clinical research components. One example is the publication of the
guidelines, which shows that NHLBI is interested in translating the science in ways
that have a direct impact on patient care.

CRAIG: I’ve never heard anyone say it better. I’ve noticed that when I submit a grant
involving clinical research it is frequently looked upon by the evaluation committee as
being less important in comparison to the grants that involve basic science.

What I would like to see are more demonstration projects. I think that’s the only way
you can begin to get the questions answered. And it certainly can’t be achieved
without a database by CDC and the support of the clinicians who see the VWD
patients. I also think it would be helpful for CDC to develop a central diagnostic
laboratory for VWD so physicians with conflicting laboratory data can use the services
of a reference laboratory.

PAUL: It’s been a fruitful 10 years and we need to build on the momentum. It’s great
the NHLBI guidelines were published, but what happens next? Moving forward from
here is going to take a lot more hard work. We need to continue our advocacy efforts
and our work with the federal and state governments. We also need to continue our
relationship with reimbursers and this is facilitated by our Global Health Care Policy
Group. It requires a great deal of focused effort. We rely on patient organizations,
the CDC and physicians. We can’t do it by ourselves because we’re often seen as just
another company that has a special interest. Of course, that special interest is called
patients. From this standpoint we need to ensure that the therapies, the reimbursement,
and the emphasis are on diseases that do not usually get the attention they deserve. It
takes a good, solid plan for working together over the next few years to establish our
priorities and determine how to build a coalition to address these plans together. We
intend to have an impact on all ages, all demographics and both genders in order to
raise awareness around VWD and to increase diagnoses.

As a member of industry, we have been involved in advocacy for many years and
understand our critical role. We also need to address this issue globally because other
countries are grappling with the same issues surrounding diagnosis, awareness
and testing methods. As a global company, we can leverage our reach to expand
awareness, diagnosis and treatment globally.
About the Participants

Garrett E. Bergman, M.D.
Dr. Bergman is the Medical Director for CSL Behring. In this capacity, he provides scientific and medical support in the commercial operations of the company. A pediatric hematologist by training, Dr. Bergman enjoyed a productive clinical and academic career for 15 years at the Medical College of Pennsylvania, leaving to enter the biopharmaceutical industry. He has worked in both large pharmaceutical companies and small, biotech startups for more than 20 years, primarily in Clinical Research and Development. He has led the development of several new plasma derivative biologics and drugs. He has also provided Medical and Scientific support to the sales and marketing divisions of several companies. Dr. Bergman received his medical degree from Jefferson Medical College, and an EMBA from the Fox School of Business and Management at Temple University.

Craig M. Kessler, M.D., MACP
Dr. Craig Kessler is Professor of Medicine and Pathology and Chief of the Division of Coagulation at the Georgetown University School of Medicine in Washington, D.C. He is also the Director of the Hemophilia and Thrombosis Comprehensive Treatment Center and Director of Therapeutic and Cellular Apheresis. Dr. Kessler has been active in hemophilia care and research throughout his career and is currently the Chair of the Medical and Scientific Advisory Council of the National Hemophilia Foundation. He has also served on steering committees of the Centers for Disease Control and Prevention. He is co-editor of the journal, *Haemophilia*.

Dr. Kessler’s research interests include treatment strategies for the prevention and treatment of blood-borne viral diseases, development of an animal model to study alloantibody formation to FVIII protein and the development of devices to measure FVIII coagulant activity. He has also been involved in numerous clinical trials and has written over 250 papers and book chapters and is co-editor of the textbook, *Consultative Hemostasis and Thrombosis*. Dr. Kessler received his medical degree from Tulane University School of Medicine.

Robert R. Montgomery, M.D.
Dr. Robert Montgomery is Professor of Pediatric Hematology at the Medical College of Wisconsin and the Senior Investigator at the Blood Research Institute of the Blood Center of Wisconsin. Dr. Montgomery also directs a program project on von Willebrand disease in the U.S. and is involved in research on gene therapy for hemophilia as well as the cell and molecular biology of von Willebrand factor. An integral part of the project involves VWD patient samples sent to the Blood-Center of Wisconsin’s Hemostasis Lab for testing.

Recently, some of Dr. Montgomery’s academic publications were presented at the annual meeting of the American Society of Hematology. This presentation included work on the impact of racial differences in VWF testing and the analysis of bleeding scores in VWD. In addition, Dr. Montgomery served on the NHLBI’s expert panel that developed the guidelines for the diagnosis and treatment of VWD. Dr. Montgomery received his medical degree from the University of Pittsburgh School of Medicine.

Ann-Marie Nazzaro, Ph.D.
Ann-Marie Nazzaro, Ph.D., is Vice President for Education at the National Hemophilia Foundation (NHF) of the U.S., a position she has held for eleven years. Ann-Marie is responsible for the NHF’s consumer education and training, and she is a key member of the team that oversees medical education. Ann-Marie is the Project Director/Principal Investigator for the NHF’s Cooperative Agreement with the Centers for Disease Control and Prevention. The cornerstone of this agreement is a collaborative program to reduce or prevent complications from bleeding disorders. Ann-Marie led the
About the Participants

team that launched “Project Red Flag: Real Talk about Women’s Bleeding Disorders.” This campaign has nearly tripled the number of women and girls using hemophilia treatment centers.

Ann-Marie received her doctorate in Health Communications Research from the University of Pennsylvania where she worked on health promotion and risk prevention campaigns. Ann-Marie has taught at the graduate and undergraduate levels. Before joining NHF, Ann-Marie worked as an executive director for the YWCA, developing programs on women’s health, notably, a breast cancer outreach and screening program for underserved women.

**Sally Owens, R.N., BSN**

Sally Owens has been working in the bleeding disorder community for over 30 years. She began her career as a nurse coordinator for the University of Michigan Hemophilia Treatment Center in Ann Arbor when comprehensive care was being developed. Subsequently, she was appointed the Executive Director for the Hemophilia Foundation of Michigan. She held this position for nearly twenty years during which time she served as the Regional Director coordinating a multi-state hemophilia treatment center network. She joined the Centers for Disease Control (CDC) in June 1996 to coordinate the newly formed national Hemophilia Treatment Center (HTC) program aimed at preventing complications of hemophilia, and she served as the Director of the HTC Program for the CDC.

Ms. Owens has been instrumental in developing programs for several blood disorders and currently directs the Division’s newly formed Prevention Research Team that administers public health translation programs for people with bleeding and clotting disorders. She has served on numerous working groups for the National Hemophilia Foundation and the National Institute of Health and has received many awards including the past title of “Humanitarian of the Year” from the National Hemophilia Foundation. She received a “Project Red Flag Visionary Award” in 2008 to celebrate 10 years of service on behalf of women with bleeding disorders.

**Paul R. Perreault**

Paul Perreault is the Executive Vice President of Worldwide Commercial Operations at CSL Behring. He is responsible for all sales, marketing and commercial development activities at CSL Behring.

Previously, Mr. Perreault was Vice President and General Manager of Plasma Operations at Aventis Bio-Services, where he oversaw all plasma operations and compliance initiatives at their U.S. plasma collection centers. In this capacity, he also managed the Environmental Health and Safety team and the Corporate Marketing Department. Mr. Perreault has also served as Vice President and General Manager for the Aventis Behring Hospital Products Business Unit in North America and Puerto Rico.

Prior to joining CSL Behring, Mr. Perreault worked for Wyeth-Ayerst Laboratories for 16 years in various key positions, including Area Business Director, Manager of Marketing Programs and District Sales Manager. Mr. Perreault has a bachelor’s degree in psychology from the University of Central Florida and has completed advanced business management training at the Kellogg and Wharton schools of business.

**About CSL Behring**

CSL Behring is a global leader in plasma protein biotherapeutics. Dedicated to saving lives and improving the quality of life for patients with rare diseases worldwide, the company provides safe and effective plasma-derived and recombinant products and offers patients a wide range of related services.