

Letter from the President: A Conversation with Sherri Ozawa, RN



For this edition, we've prepared an interview with SABM President, Sherri Ozawa, RN. Sherri has over 27 years of clinical experience and is also clinical director of The Institute for Patient Blood Management & Bloodless Medicine and Surgery at Englewood Health. She is just past the midpoint of her one-year term as President and brings a unique perspective to this role.
Kevin T. Wright, Editor

Wright: Sherri, it's of note that you're the first non-physician president of SABM?

Ozawa: Yes, it's quite an honor to serve as president. It seems the years have really flown by since the beginning of SABM, working and serving in various capacities including the board of directors and as executive director. I want to comment on an important characteristic of SABM: all professions are held in equal regard, it's all inclusive; whether as a nurse or physician or other medical professional, we all contribute toward a common goal and I've appreciated that during all these years.

Wright: Please tell us about your background?

Ozawa: It may surprise many to know that my background and education was originally in classical music as my parents always placed a high value on the arts. This was important to me because I started learning to play the cello when I was just 7-years-old, and they supported my musical goals. Years later, I even played at Lincoln Center with my college orchestra.

Wright: That is surprising to hear, but only because we don't often learn of the experiences that shape a person; what caused the change in your life path?

Ozawa: My parents always held as a higher value contributing to the improvement of the lives of others. My father was a successful businessman, but I remember that he always personally felt that a career serving others would have been more rewarding, and that made a lasting impression on me. During my later school years, it was a time in history when there was a nursing shortage, and the opportunity for financial assistance to attend school was available; there were others who were also making career changes that had an influence. So, thinking ahead about a sustainable career, nursing is altruistic—and that coupled with the wisdom of trusted friends and relatives helped greatly.

Wright: Walk us through your start in nursing?

Ozawa: It was surprisingly uncomplicated really: I began by attending Nursing School in the 1990s and there was an opportunity to go into critical care nursing. From that point things really unfolded, shall I say almost naturally from there. This enabled me to develop good relationships at a variety of training levels.

Wright: And then Englewood?

Ozawa: Actually, I went to the nursing school at Englewood, and again one thing led to another. I received and accepted a job offer at the institution, originally in nephrology nursing.

Wright: When did your attention turn to "bloodless" medicine?

Ozawa: The hospital was just starting a "bloodless" medicine and surgery program in 1995, and I was asked to coordinate. As I think back, the goal of Englewood really stemmed from a sincere interest to help an underserved population. I had also gained experience as an ethics committee member, so needless to say that for me patient rights were very important; it was the 'right fit' for me in many ways.

Wright: What were some of your initial challenges?

Ozawa: At that time, no one had even heard of "bloodless medicine" or "patient blood management," so it was the early recognition that made it difficult. People didn't know what the term was or what it meant; while clinicians were genuinely open-minded, overall, they were simply confused.

Wright: You're describing a knowledge deficit that we're all familiar with, how did you overcome it?

Ozawa: As we like to say at Englewood, we applied "slow gentle pressure over time" and we needed tenacity and persistence. Coupled with that, I had to put in the time building relationships, there's just no substitute. So, I met with each physician, one by one and familiarized them with the concept, the needs of the patients, and the structure of the program. Fortunately, there were physician leaders in key areas, hematology, anesthesiology, critical care, and surgery. This key support was vital to the success of the program. I won't deny that some individuals were less enthusiastic and even skeptical. Of course, this presented its own challenge because people follow the lead of those viewed as an authority, so to speak. That is to say: residents follow the lead of their attending's, and so forth.

Wright: At this point, would you share with us the beginnings of SABM?

**SABM NEWSLETTER
AUGUST 2020
ISSUE**



2020 Virtual Annual Meeting

September 10-12, 2020

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**SABM 2020 Newsletter
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Featured Affiliates

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Platinum Level

Gold Level

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ANESTHESIA & ANALGESIA

Consider submitting your future manuscripts in PBM for peer review and publication in this new section. The success of this endeavor will depend on the provision of material to make it lively and attractive to our colleagues and other professionals in the field.

**Members Invited to Submit
Papers [CLICK HERE](#)**

Society for the Advancement of Blood Management, Inc. 2020 Annual Meeting Announcement

Dear SABM Community,

After carefully considering all options for this year's SABM Annual Meeting and in light of the ongoing COVID-19 pandemic, SABM has decided to cancel the in-person meeting and move to an all-virtual event to be held September 10-12, 2020 which are the originally scheduled dates for the meeting. While we make this decision with a heavy heart, we are also energized by the prospect of continuing to offer our attendees the exceptional learning and community experience you deserve. Offering a virtual meeting will help make the excellent speakers and content available to a wider audience and we are excited at the prospect of growing our SABM community.

SABM has chosen a state-of-the art virtual meeting platform that combines an innovative learning environment with reliable functionality and intuitive navigation. The schedule will include a mix of live and on-demand sessions, along with an interactive exhibition hall, networking spaces and poster hall.

We understand schedules are challenging as many of us are managing new work and home demands during this time. To ensure you have ultimate flexibility, we are excited to offer 24-hour access to the virtual Annual Meeting platform—allowing you to learn and engage at your own pace no matter where you are in the world or your day. Attendees will also be able to access the platform for an additional month following the conclusion of the meeting.

SABM will provide continuous updates about the 2020 Annual Meeting in the coming days and weeks as planning continues. We will make history together in September as we celebrate you, your accomplishments and this remarkable community.

We look forward to seeing you in September.

EARLY REGISTRATION DEADLINE EXTENDED TO AUGUST 31, 2020

Please [CLICK HERE](#) to access the Annual Meeting Program.

SABM is very excited to announce that we have reduced the registration rates by 50%. We realize that there have been multiple restrictions placed on educational funding and we did not want funding to be a barrier to attending the SABM 2020 Annual Meeting. Please get your requests for training funds in now.

Virtual SABM 2020 Annual Meeting Registration Rates

	EARLY-BIRD On or before August 31st	REGULAR After August 31st
Member - Allied Health/Affiliate	\$212.50	\$250.00
Member - Physician/Executive	\$262.50	\$300.00
Member - Technologist/Trainee/Student/Resident/Fellow	\$50.00	\$75.00
Non-Member - Allied Health/Affiliate	\$250.00	\$275.00
Non-Member - Physician/Executive	\$337.50	\$362.50
Non-Member - Technologist/Trainee/Student/Resident/Fellow	\$150.00	\$175.00

Letter from the President: A Conversation with Sherri Ozawa, RN

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Ozawa: Well now we're going back to late 1999, and certain physicians in particular that are well known to many of us come to mind: Manuel Estioko, MD, Patricia Ford, MD, and Richard Spence, MD. At that time, while there were bloodless meetings or conferences, we came to feel that there was a need to understand the mindset, what I mean is that there needed to be a greater understanding of why people were using blood; so discussions developed, and as a broader scope of individuals talked, we realized that there was no actual organization that brought to the table two groups: people that were interested in "no blood" but also the people that were involved in transfusion. We felt there were no "bad guys" or "good guys" but that the enemy was really ignorance about both the implications of transfusion and the management of patients for whom transfusion was not an option.

I also have to make mention of John Adamson, MD, who did much of the initial work on the investigation and application of ESAs. Another important early contributor was Arthur Brace, MD, who is a modest but world-renowned expert in transfusion medicine; I've always appreciated that he is a balanced and ethically grounded professional.

Wright: You've certainly enjoyed a long association with Aryeh Shander, MD, how did he contribute to your growth?

Ozawa: Aryeh is one of my dearest friends, a mentor and colleague. From day one of the program, he was clear minded, understood the ethical and legal aspects of the program development, yet had the clinical experience and qualifications to motivate and educate his colleagues. Without his influence and capability, Patient Blood Management would have never progressed to where it is today.

Wright: Please expand on the initial ethical and legal aspects of program development?

Ozawa: We had many early challenges in developing the program, for example, how to handle "mature" minors, pregnant women, people who had developmental disabilities, and so forth. How would we handle cases of patients who sought help but that we typically would not care for in our setting – like trauma and certain pediatric cases? How would we help them or refer them, or engage the specialists to ensure that they would get the care that they needed and deserved?

I'll mention one case in particular of a 13-year-old with ulcerative colitis, who was a "no blood" patient prior to the start of our program—this presented an ethical issue that helped to shape decisions and an understanding of the challenges involved in building a program.

Wright: How have you been able to motivate other physicians and nurses to adopt "bloodless" techniques?

Ozawa: Many people were completely unfamiliar with any issues associated with blood transfusion. Given the time in history, many people were still thinking about HIV and hepatitis as the main issues, although good testing was already in place. Otherwise, most people viewed blood as "cheap and available," and gave very little thought to any other issues or concerns. Patients who declined transfusion

were often seen as on the "fringe" and not worthy of serious conversation or adequate medical care. These views needed to change, but it took time, evidence, research, education, and a strong will.

Another case comes to mind that impacted all of us: there was a patient who had a rupturing abdominal aortic aneurysm, jumped on a flight from Puerto Rico, (of course, we did not advise him to do this) and came directly from the airport to our emergency room. Fortunately, the bleeding was anatomically contained and he survived the surgery to return home healthy. It struck us as amazing that a patient would feel so strongly about our Center, that he would take a trip like that for the kind of care he wanted.

Wright: Overall, what are some of the pivotal goals you have achieved?

Ozawa: Participating in the creation SABM and seeing it grow has been very exciting and gratifying. Our PBM certificate course has now trained hundreds of people which is an amazing accomplishment. Another is being able to search the term "patient blood management" and then see literally thousands of references, which proves that it has become a known and accepted term in the medical lexicon. Most importantly, being able to make changes that directly affect patient care and improve patient outcomes; this is why we are all in this profession in the first place.

Wright: Please speak to some of the changes in definition for PBM and why?

Ozawa: We have seen the definition of Patient Blood Management migrate from something that was "blood product" centered to something that was patient centered. In our modern definition of PBM – transfusion is not even mentioned, which is a huge change of focus from where we all started. Patient Blood Management is not "anti-transfusion," it is however, a science and evidence-based approach to blood conservation, managing anemia, and optimizing coagulation.

Wright: What are your goals during your tenure as President?

Ozawa: COVID-19 has of course changed many of the ways that we see the world, but what we didn't know at first, is that there are multiple blood and coagulation related issues associated with this disease. Establishing a COVID-19 resource center is a great step forward. Our next effort will be to develop a "Coagulation Corner", much like our Iron Corner, which hosts all things related to therapy for iron deficiency and iron deficiency anemia. I also hope to create and disseminate a global definition of PBM.

Wright: Finally, where do you see SABM in 5 years?

Ozawa: I would like to see the SABM Clinical and Administrative Standards as THE go to document that defines what PBM programs should look like and how they should function. I hope that SABM has a significant impact on the entities that pay for healthcare services, whether such are national services or private payers. I would like to see the membership continue to grow and expand in specialties and expertise.

Blood Bank and Laboratory Strategies to COVID-19 Pandemic

Since December 2019, the severe acute respiratory syndrome (ARDS) caused by coronavirus (SARS-CoV-2) spread globally, reaching pandemic state within three months, per the World Health Organization (WHO).¹ Several measures were developed and adopted by different countries, governments, and health organizations to contain the spreading of this deadly virus, particularly in elderly populations with comorbidities.

The social and economic effects of this pandemic created major challenges on all aspects of normal daily activities. One of these challenges is hospital operations and day to day workflow. Blood banks and transfusion medicine units, as with clinical laboratories were impacted significantly by these challenges on multiple levels, including adopting and complying with safety measures, staffing, reagents, bloods supplies, and budgeting.

In order to serve the needs of a large academic medical center, medical and laboratory professional employees must be physically present in the laboratory. Safety measures such as frequent cleaning and disinfection of the work environment should be undertaken as well as universal masking and meticulous handwashing to prevent the spread of infection. Separating staff by staggering shift hours is also essential to promote social distancing while evenly distributing staff across a 24-hour period. Ideally it is preferable to place workstations in different areas of the lab, if feasible, so that staff is physically separated. If multiple staff members become infected and cannot work plans must be in place to continue operations. Cross training technologists from other areas in the clinical laboratory is one possible solution, but because of extensive regulations and competency requirements in blood bank laboratories this may not be a viable option without some notice.

Institutionally, postponement of elective surgeries and other elective procedures that rely on transfusion support must be implemented if staffing levels become critically low due to employee absenteeism and quarantine. Close monitoring of testing volumes, blood product utilization, purchases and waste is important to determine how the pandemic will affect cost projections.

In addition to laboratory personnel optimization and safety, blood product resource stewardship is essential. Patient blood management (PBM) is a goal driven multidisciplinary approach based on implementation of evidence based medical and surgical guidelines which minimize unnecessary transfusion.² In light of the current pandemic landscape PBM strategies aimed at conserving resources, optimizing patient outcomes, and reducing healthcare costs are imperative.^{3,4}

Hospital acquired anemia is of particular concern in critically

ill patients such as those with ARDS or sepsis.⁵ Specifically, frequent blood gas analyses due to worsening pulmonary function, hematology and coagulation laboratory testing, and blood culture testing contributes to this. When feasible, micro-sampling and the use of blood conservation devices such as closed system sampling devices, should be utilized to reduce the amount of iatrogenic blood loss.⁶ Daily evaluation of tests ordered is imperative with only those that are essential for clinical direction obtained.

It is well known that in non-hemorrhaging patients the risks of transfusion may outweigh the benefits and in fact may have negative effects on the lung, such as transfusion-related acute lung injury or pulmonary hypertension.⁷ Since COVID-19 positive patients generally are not bleeding, lab results alone cannot be used to determine appropriateness. Clinical and patient specific factors such as age, intravascular volume status, and comorbidities should be considered in a risk/benefit analysis and measures that increase oxygen delivery should be utilized prior to transfusion.

During the COVID-19 pandemic, as with many crisis, supply chain and manufacturing volumes have been disrupted or reduced and staff in hot zones have been overburdened due to increased critical care demand leading to shortages of resources. This was seen specifically in the limited supply of personal protective equipment, ICU beds, ventilators, and at times, medications for healthcare personnel.

The following actions were taken at our level one, university-based hospital in response to the SARS-CoV-2 pandemic:

Lab Staff:

- Limited special testing to certain days
- Contacted distributors to secure more reagent kits for tests with increased utilization (i.e. D-dimer, Thromboelastographic)
- Bundle reagent orders between hospitals
- Cross train staff to other lab sections
- Temporarily furlough staff as a last resort

Clinical Staff:

- Review laboratory and transfusion orders at daily rounds for appropriateness
- Open lines of communication and daily reporting of bed and other resource levels
- Utilizing blood sparing devices and tubes to limit iatrogenic losses
- Add on orders on leftover samples when appropriate
- Cross training staff to other clinical areas
- Limit overtime

PBM objectives on improving outcomes is imperative in a crisis such as COVID-19. One of the main benefits of strategies employed was to reduce unnecessary use of limited resources in the initial phase of the pandemic and

Breaking Clinical News

utilization of evidence-based guidelines in order to diminish the severity of illness in individual patients. PBM will continue to play an important role in presumed subsequent waves until more effective treatment and herd immunity is established.

Contributors: Christine M. Cahill, BSN, MS, RN; Majed A. Refaai MD; Debra Masel MT(ASCP)SBB

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News and Events

Bloodless Medicine & Surgery Week 2020 Webinar

Calabar, Nigeria

A multidisciplinary Bloodless Medicine & Surgery Group (BMSG) in University of Calabar Teaching Hospital (UCTH), Nigeria, has been holding an annual Bloodless Medicine & Surgery Week (BMSW) since 2016. The aim of the Week is to raise awareness about Bloodless Medicine & Surgery (BMS) and provide education for patients and clinicians on the subject. The week usually featured talks, videos, free hemoglobin checks, reviews of bloodless surgical procedures, and a novelty football match between female students of different faculties in the College of Medical Sciences.

BMSW 2020 was scheduled for May 11-16 in UCTH. By March 2020, there was a national lockdown due to the Covid-19 pandemic, and as the date for BMSW 2020 drew closer it became obvious that the typical physical meetings could not be held. Just when cancellation was being considered in late April, the idea of moving the meetings online was introduced by the group. Immediately, plans were drawn up and advertised: webinars over 3 days, video shows on one day, an industry presentation on another day, and a quiz contest for medical and allied science students on the last day of the week – all on Zoom.

Many SABM members served as panelists and speakers at BMSW 2020, including notable SABM members, Sherri Ozawa, RN, (SABM President), Aryeh Shander, MD, Irwin Gross, MD, and Shannon Farmer; PBM experts, Axel Hofmann and Richard Daniel, Esq; Bloodless or Transfusion-Free Program Directors and Managers, Steven Frank, MD, Yvette Bunch, RN, Cassandra UpChurch, RN, Kevin Wright, and Loretta Humes. Other notable PBM experts were, Kellie Simmons-Massey, DNP, Ananthi Krishnamoorthi, MD, James Reynolds, also new SABM members, Marcus Inyama, MD, (speaker) and Queeneth Kalu, MD (Chairman, organizing committee). Some eminent speakers were non-SABM members from Nigeria, UK, and India.

SABM members brought the wealth of their knowledge and experience in BMS successfully to bear during the webinars, with a peak concurrent attendance of 321 from 52 countries on 6 continents, the very first on record in BMS. While many in attendance were members of SABM, there were members of other PBM Societies and BMSS also in attendance. We say a big thank you to SABM members and others who helped to make BMSW 2020 a success!

Contributor: Nathaniel Usoro MD



Pictured in Webinar slide left to right: *Denton Cooley, MD; Richard Spence, MD*; Upper right column top to bottom: *Nathaniel Usoro MD, Chairman, Bloodless Medicine & Surgery Group; Sherri Ozawa, RN; Clementina Efm, Patient; Queeneth Kalu, MD*

From Cardiac Surgeon to COVID Specialist? - My Personal Journey



Turin, Italy

It was Friday afternoon, the 20th of March, in Maria Pia Hospital, Turin, Italy. That morning we performed a redo mitral valve replacement and tricuspid repair for an 83-year-old patient. This was successfully accomplished using our bloodless protocol of

which we were proud. Everything was soon to change—for around 6:00 pm that evening, when closing the chest of a patient after an emergency CABG procedure, the communication arrived: the hospital was to be completely converted from a cardio-vascular centre to a COVID Hospital. In that moment I realized that my hands would not be moving again as a cardiac surgeon for a long while.

Things then moved rapidly; in just 4 days all patients in the clinic were moved to nearby hospitals, including those in their early postop days, and we now were prepared for battle against an unknown enemy. I was assigned to the first COVID shift of the hospital along with two colleagues; as we were waiting for 16 patients overnight with mild symptoms, the ambulances arrive and patients were literally thrown down in the corridor of the ward by the paramedics! We realized that this pandemic was going to change our lives as surgeons and cardiologists forever. In less than a week, all beds including the ICU were filled with COVID patients. It was a difficult time for colleagues who became infected while struggling through the nightmare of supporting patients with an unknown disease.

COVID then strikes me—within 4 days from the first night shift with only precarious protections, muscle pain develops first in my hips and legs that became so intense painkillers were needed to sleep; next a mild intermittent temperature with increasing weakness began sapping my energy, along with difficulty breathing through my respirator mask which reluctantly meant going without.

Chest x-rays revealed that the infection was in the early stages; I had started taking the medication Azitromycine but was unable to assist my colleagues further. This meant going to my home for a kind of hibernation, lethargic, sleeping 20 hours a day, getting up just to force myself to eat and drink something, then back to sleep exhausted, unable to even sit up. Fortunately, my oxygen saturation was always fine, above 95%, but I had tachypnea and tachycardia at rest (up to 110 bpm), which for me was quite high as I enjoy sports also being an active mountain climber, with a usual 55 bpm at rest. Initially, there was noticeable weight loss, however after 2 weeks a slow but steady recovery began; I was soon ready to get back into the trenches as one of those considered “immune.” Other colleagues were not so lucky and I am grateful for their sacrifice, they literally gave their lives.

I am a cardiac surgeon again, slowly returning to “a new normal.” However, after being a COVID doctor for three months, the way I look into my patients’ heart will never be the same again.

Contributor: Samuel Mancuso, MD

Continuing Education

Managing Blood Product Usage During the COVID-19 Pandemic

For many years, it has been challenging to maintain an adequate blood supply for the management of both surgical and critically ill patients. Given that red blood cells and platelets have a “shelf life” of 42 days and 5 days respectively, hospitals do not have long-term stores of these resources. The tenuous nature of the blood supply is most evident during hurricanes and snowstorms, which impact one’s ability to donate blood, and during summer vacations, when schools are closed and mobile blood drives are not operating. The recent COVID-19 pandemic has furthered concerns about a potential blood shortage, as social distancing measures and school closures have resulted in reduced donations.^{1,2}

With the anticipated blood shortage, reducing unnecessary transfusions in all hospitalized patients by implementing patient blood management (PBM) techniques, become more important now than ever. Multiple large randomized trials demonstrate that patients do either as well, or better, with lower compared to higher hemoglobin transfusion triggers.

Currently, there is a renewed focus on how to best manage the supply and demand of blood products. Multiple initiatives to increase donor recruitment, such as expanding blood drives at hospitals and relaxing blood donation restrictions, have been implemented in recent months.³ However, most PBM methods invoke “keeping the blood in the patient,” which will help balance supply and demand for allogeneic blood components, especially during the current pandemic.

PBM programs advocate reducing unnecessary transfusions which also decreases the demand for blood, and in the past few years over 20 techniques have been developed to improve blood utilization in the pre-, intra-, and postoperative periods, some of which are listed in Table 1.⁴ The core tenet of PBM has always been to “do more with less,” and by optimizing patient care we can decrease our reliance on allogeneic transfusions.

As we resume elective surgeries, it is now more important than ever to focus our efforts on maintaining balance between blood supply and demand. The utilization of PBM can favorably impact this balance, while delivering high-value care to our patients.

Contributors: Steven M. Frank, MD and Brian D. Lo, BS

Table 1: Patient Blood Management Techniques to Improve Blood Utilization

Patient Blood Management Techniques	
Preoperative	<ul style="list-style-type: none">• Diagnosing and Treating Preoperative Anemia• Managing Iron Deficiency• Discontinuing Anticoagulants Appropriately
Intraoperative	<ul style="list-style-type: none">• Single Unit Erythrocyte Transfusions• Maintaining Perioperative Normothermia• Utilizing Cell Salvage• Acute Normovolemic Hemodilution• Controlled Hypotension• Minimally Invasive Surgical Techniques• Using Topical Hemostatic Agents• Antifibrinolytic Drugs When Indicated• Point of Care Coagulation Testing
Postoperative	<ul style="list-style-type: none">• Decreasing Frequency of Blood Draws• Using Pediatric-Sized Phlebotomy Tubes• Tolerating Lower Hemoglobin Values• Restrictive Erythrocyte Transfusion Triggers

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Continuing Education

Blood Bank Guy

Interviews with SABM members are continually featured on the BloodBankGuy website. Dr. Joe Chaffin/TheBloodBankGuy conducts these PBM-oriented podcasts. Recently, Carolyn Burns, MD, highlighted the essentials of an effective PBM Committee as pictured below. Previous podcasts have featured: Steven Frank, MD, Aryeh Shander, MD, Joseph Sweeney, MD, and Pierre Tibi, MD. Log in @ <https://www.bbguy.org>. These podcasts provide CME credits.

Effective PBM Committees Look At:

- *Transfusion appropriateness*
- *Use of transfusion order guidelines*
- *Positive patient I.D.*
- *Transfusion documentation*
- *Transfusion-related adverse events*
- *C:T ratios, single unit transfusion %*
- *Blood product wastage*
- *Blood utilization by DRG, service line, physician*

- *Informed choice (consent)*
- *Use of pharmaceuticals*
- *Use of cell salvage, ANH**
- *Anemia management*
- *Use of topical hemostatics*
- *Review of MHP*, anticoagulant reversal*
- *Laboratory services*
- *Educational oversight*
- *Donor center issues*

*ANH: Acute Normovolemic Hemodilution, *MHP: Massive Hemorrhage Protocol.

Image courtesy of Carolyn Burns, MD

Members / Mentors

Patient Blood Management Certificate Course

SABM continues to be the recognized leader and key educational resource for patient blood management (PBM). In support of SABM's mission to improve health, increase safety and reduce healthcare costs through the advancement of scientific knowledge and practice in PBM, we continue to promote education and training to achieve change through a multidisciplinary approach to PBM, which supports our members with high quality continuing educational opportunities.

One of the most popular educational opportunities has been our comprehensive PBM Certificate Course. Since the course launch in 2015, we continue to receive great feedback and interest in the course offering. Due to the impacts of the COVID-19 pandemic, we will not be offering the PBM certificate Course during the 2020 Annual meeting. We have a unique new opportunity for our members and PBM enthusiasts: the first ever hybrid online PBM course. The structured cohort of students will be led through this online PBM Certificate Course in a 4-week period: October 12-16; 19-23; 26-30; and November 2-6, 2020. During this 4-week period, the students will be expected to complete between 60-90 minutes of education per week and will be assigned certain segments of the PBM Certificate Course. Each week will finish with a 60-minute web-based meeting with the presenters or subject matter experts of the sessions covered. This will provide an opportunity to review the course content and answer questions in a live, real-time environment, adding a component that would not normally be available in the online course. The grand finale of this course will highlight SABM's Patient Blood Management Awareness Week, November 2-6, 2020!

This hybrid immersion course provides participants with the knowledge and tools needed for those working in the field of PBM. This course was created by recognized clinical experts in the field of PBM. Whether a physician, nurse, perfusionist, advocate or administrator, this course offers administrative guidance, PBM program principles, clinical concepts, and best practice applications. We encourage you to share this exciting offering with your colleagues.

To be part of this special event, students must enroll in the PBM Certificate Course between the dates of September 1 to October 14, 2020. For registration and courser details click here: sabm.org/online-pbm-certificate-course

Contributor: Mary Ann O'Brien, RN, MSN, CCRN, CNE

Call for Member Accomplishments

If you have been given an award, received recognition, or have been recently published, we would like to publish it in the next issue of the SABM newsletter.

Please send an e-mail with the details to newsletter@sabm.org. Be sure to include your full name and details regarding the award, the recognition you received, or the publication citation.

Standards Showcase

Patient Blood Management: Understanding Fractions

Evidence-based guidelines have established the efficacy of utilizing alternatives or options to blood components. While there is an increased awareness of the risks associated with blood transfusion, this is not always reflected in daily practice and data suggests a continued variation in practice. PBM emphasizes goal-directed, individualized care to optimize a patient's red cell mass, minimize blood loss and harness the patient's physiologic tolerance of anemia.

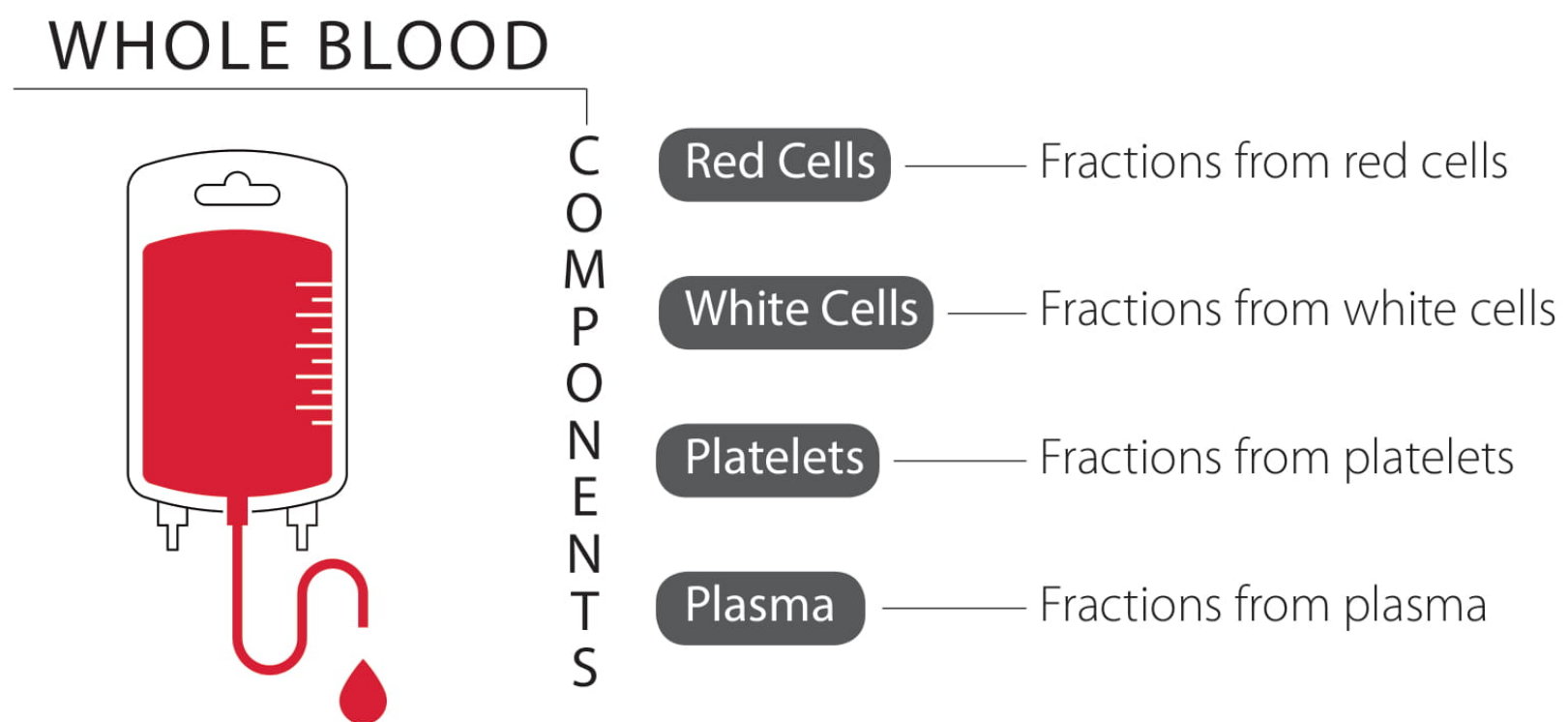
Informed Consent

During the patient consent process, it is important for clinicians to explain the true risks, side effects and options to blood components. It is then necessary to convey this information in a way that is easily understood by the patient which contributes to a patient-centered plan of care. The discussion between clinician and patient is unhurried, with

the goal of creating an environment wherein the patient is participating in the decision-making process. The patient is then fully informed of the available alternatives or options to blood transfusion, some of which may include: recombinant formulations, factor concentrates, blood derivatives and fractions.

Fractions

Advancements in medicine in the mid twentieth century made it possible to separate whole blood into components and fractions. Blood fractions are derived from the four primary blood components: red cells, white cells, platelets, and plasma. These four primary components can be separated into smaller parts, or fractions. For example, plasma can be separated into proteins, such as albumin, globulins, immunoglobulins and fibrinogen, coagulation factors and other substances.



Fractions from Red cells:

Hemoglobin – This primary protein contains iron and transports oxygen. Can be separated from red cells to formulate hemoglobin-based oxygen carriers (HBOC's) toward the goal of artificial blood.

Fractions from White cells:

Interferons – Proteins that fight viral infections; recombinant primarily available.

Fractions from Platelets:

Platelet-derived growth factor (PDGF); platelet gel (PG), platelet-rich fibrin (PRF).

Fractions from Plasma:

Albumin – A protein produced by the liver that transports hormones and other substances and is also essential for maintaining oncotic pressure.

Immunoglobulins – Protein fractions or antibodies that fight viruses.

Clotting Factors – Proteins such as cryoprecipitate and prothrombin complex concentrate; tissue adhesives, fibrin sealants.

Note: Chart not intended to be comprehensive

Standards Showcase

If recommending a blood fraction product, some patients who decline whole blood may accept blood fractions whereas others may not. Further, some medical tests and therapies involve withdrawing a small amount of blood which is processed and reinjected. For example, with the nuclear medicine test such blood is mixed with a radioactive tracer and then reinjected. Another example would be the use of platelet gel where a small amount of blood is withdrawn and concentrated into a solution which is then applied on the surgical site. In these and other cases, the details should be discussed with the patient.

Blood Components vs. Fractions vs. Recombinant Products

These terms when grouped together can be confusing to the patient. Consider erythropoietin for anemia management; some formulations contain albumin such as, Procrit® and Epogen® whereas both Eprex® and Retacrit® do not. Since two of these formulations contain albumin, they are considered products containing a fraction. All of these are recombinant formulations yet not all contain a minor blood fraction. Additionally, clinicians may use the terms blood fraction(s) and blood component(s) interchangeably; this may not be understood by the patient to whom blood components may generally be considered as: red cells, white cells, platelets, or plasma. A thorough and clear explanation is needed when using these terms.

Expanded List of Treatment Options

(Not intended to be comprehensive)

Hemostatic agents

- Vitamin K
- Tranexamic acid
- Epsilon-aminocaproic acid
- Desmopressin
- Vasopressin
- NovoSeven® RT (r-FVIIa)
- Clotting factor replacement therapy, recombinant available
- Cryoprecipitate
- Tissue adhesives (Fibrin gel or glue)
- Collagen hemostat
- Thrombin matrix, recombinant available
- Oxidized cellulose hemostat
- Gelatin foam/sponges

White Cell Options

- Granulocyte-Colony Stimulating Factor (G-CSF) See: Neupogen, Zarxio, and Granix
- Granulocyte Macrophage-Colony Stimulating Factor (GM-CSF)

Platelet Options

- Interleukin-11
- Recombinant Thrombopoietin

Anemia Management

SABM provides academic articles that demonstrate the efficacy of alternatives for managing even severe anemias successfully without the use of allogeneic blood. The publication, *Anemia in the Pre-Surgical Patient*, (Gross, 2019) highlights the following alternatives for anemia management:

- Intravenous iron is the most common intervention in pre-surgical anemia
- Vitamin B12, Folate
- Erythropoiesis Stimulating Agents (ESA)
- ESA therapy combined with supplemental iron may reduce the subsequent need for blood transfusion

Conclusion

When the clinician has a thorough understanding of blood fractions and other options to transfusion, then utilizes this knowledge in their medical and surgical care, the result is improved patient outcomes. Toward this goal, the informed consent process provides an important opportunity to educate the patient and is based on the patient's right to decide what happens to their own body. The discussion would include information about the true risks and benefits of a procedure, other clinical strategies and alternatives to transfusion. SABM encourages increased implementation of PBM initiatives at every hospital, including the pharmaceuticals, technology and techniques that can reduce or eliminate the need for a blood transfusion.

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- 5th Edition SABM *Administrative and Clinical Standards for Patient Blood Management Programs*.
Available at: sabm.org/wp-content/uploads/SABM-Standards-2019.pdf
- Choosing Wisely*® SABM Five Things Physicians and Patients Should Question.
Available at: choosingwisely.org/societies/society-for-the-advancement-of-blood-management/
- Medical Information for Clinicians.
Available at: jw.org/medical
- Clinical Strategies for Avoiding and Controlling Hemorrhage and Anemia Without Blood Transfusions in Surgical Patients.
Available at: jw.org/medical-library/strategies-downloads

Updates on COVID-19 Management

Since mid-December 2019, evidence continues to evolve regarding the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), AKA COVID-19, pandemic on almost a daily basis. Physicians and scientists from all over the world are better understanding the pathophysiological nature of this virus and acquiring more experience on how to clinically deal with this pandemic. Nevertheless, up to date, no drug has been approved by the FDA for the treatment of COVID-19 patients. Several drugs and multiple investigational agents have been studied and tried in few hundred clinical trials around the world for management of COVID-19 infected patients. In fact, as of today there is a total of 316 treatment and 202 vaccine trials for COVID-19 worldwide.¹ In this article we will discuss the most recent clinical management measures of COVID-19 patients.

A wide variety of clinical manifestations have been identified and granted better insights of COVID-19 infection course, which ranges from asymptomatic to critical illness. A significant percentage (up to 60%) of adults with COVID-19 infection, confirmed by PCR or antigen test, are asymptomatic or present with mild symptoms, such as fever, cough, sore throat, malaise, headache, muscle pain but without shortness of breath, dyspnea, or abnormal chest imaging.² Self-isolation at home for up to 14 days is considered an adequate management in asymptomatic patients.³ Mild cases can be managed in an ambulatory setting or through telemedicine or remote visits.

Evidence of lower respiratory disease, by clinical assessment or imaging along with a saturation of oxygen (SpO₂) \geq 94% on room air are clinically assumed moderate COVID-19 cases. Respiratory frequency of >30 breaths/min, SpO₂ $<94\%$ on room air, ratio of arterial partial pressure of oxygen to fraction of inspired oxygen (PaO₂/FiO₂) <300 mmHg, or lung infiltrates of $>50\%$ is considered a severe COVID-19 infection. Patients with symptomatic COVID-19 and high-risk factors for severe disease should be closely monitored as the clinical course may rapidly progress in some patients.^{4,5} These patients will likely need to undergo intubation. In critical cases, patients most likely present with respiratory failure, septic shock, and/or multiple organ dysfunction. Empiric antibiotic treatment for community-acquired pneumonia may be initiated if bacterial pneumonia or sepsis is strongly suspected.^{6,7}

In general, initial evaluation of moderately to critically ill COVID-19 patients should include chest x-ray, ultrasound, or chest CT scan and ECG if clinically indicated. Laboratory testing may include, but not limited to, CBC with differential and a metabolic profile along with liver and renal function tests. Assessment of inflammatory markers such as CRP, D-dimer, and ferritin may have some prognostic value.

Convalescent Plasma

Early case reports of convalescent plasma usage in COVID-19 patients showed rapid virus clearance, faster recovery and shorter hospital length of stay (LOS) in the critically ill patients that required mechanical ventilation.⁸ In the USA, using the FDA approved emergency investigational new drug (IND) and expanded access protocols significant amount of convalescent plasma units have been utilized in the management of COVID-19 patients. However, almost all of these plasma units were untested for anti-viral neutralizing titers.⁹ A meta-analysis by *Zhu et al.* of 10 clinical studies (4 case studies, 5 case reports and 1 case-control study) assessed the outcome of a total 212 COVID-19 patients. Of those, 107 patients received convalescent plasma, 16 received immunoglobulin, 49 were treated with different methods, and the remaining 40 patients were lost to analysis. Both of the convalescent plasma and immunoglobulin treatments showed promising outcomes by improving patient symptoms' and reducing mortality rate.¹⁰

Currently, several small randomized multi-center trials are underway in the USA with most of these trials, though, requiring certain anti-viral titrations (mainly 1:320). The primary endpoints of these studies vary from the efficacy of convalescent plasma in reducing time on mechanical ventilation in critically ill patients and shorter LOS to the overall survival. Other trials underway aim at the prevention of hospitalization in newly diagnosed COVID-19 patients with mild to moderate symptoms or prevention of infection in exposed individuals to a positive SARS-CoV-2 RNA patient.

Chloroquine and Hydroxychloroquine

Generally, these agents are used and well tolerated in the treatment of patients with systemic lupus erythematosus (SLE), rheumatoid arthritis, and malaria. However, both agents can cause rare but serious adverse effects that include QTc interval prolongation (associated with a high risk for cardiac arrhythmias) and hypoglycemia.^{11,12} Despite the initial potential use in COVID-19 infected patients, the FDA recently issued guidelines against the use of chloroquine or hydroxychloroquine for the treatment of COVID-19 outside of a hospital or clinical trial in order for patients to be monitored frequently for adverse effects.¹³ In a retrospective observational study of COVID-19 patients, hydroxychloroquine showed an increased risk of the composite end point of intubation or death.¹⁴ Documented serious dysrhythmias were also reported in these patients, often when combined with azithromycin.

Lopinavir/Ritonavir

Lopinavir/Ritonavir combination is an FDA approved oral HIV protease inhibitor that may cause inhibition of 3-chymotrypsin-like protease (3CLpro) and papain-like protease (PLpro). Since reduced mortality and intubation rates were achieved by using Lopinavir/Ritonavir combination in the SARS epidemic a few years ago it was anticipated to be an effective option in COVID-19

patients.^{15,16} Cao *et al.*¹⁷ analyzed the efficacy of Lopinavir/Ritonavir versus standard of care in 199 COVID-19 patients in an open label RCT. No significant differences were observed in time to clinical improvement between both groups (16 days [IQR, 13-17] vs 16 days [IQR, 15-17]; hazard ratio [HR], 1.31 [95% CI, 0.95-1.85]; P = .09). Lower, but not statically significant, 28-day mortality rates were detected in the Lopinavir/Ritonavir group (19.2% vs 25.0%) and shorter ICU stay (6 vs 11 days, respectively). LOS and viral clearance also showed no differences between both groups.

Ribavirin

This broad-spectrum antiviral drug is a guanosine analog that interferes with the replication of RNA and DNA viruses.¹⁸ The *in vitro* efficacy of ribavirin against SARS CoV was limited and required very high concentrations. Clinical utilization of ribavirin during the SARS epidemic revealed inconclusive results. Some studies also demonstrated possible harm due to liver toxicity.¹⁹ Thus, combination therapy with other antiviral drugs may provide better clinical efficacy in COVID-19 patients. Currently, a few clinical studies are underway for ribavirin but with limited outcomes.

Remdesivir

Remdesivir is a monophosphate prodrug metabolizes as an active C-adenosine nucleoside triphosphate analogue that inhibits viral RNA polymerases. Remdesivir showed potent effects against several coronaviruses and thus is a promising COVID-19 therapy.²⁰ The clinical outcomes observed in a remdesivir compassionate-use program by *Grein et al.*²¹ revealed in a small cohort of severely ill COVID-19 patients, support usage in patients who are on mechanical ventilation or extracorporeal membrane oxygenation (ECMO). In this study, improvement in oxygen-support status was observed in 68% of patients, and overall mortality was decreased by 13% over a median follow-up of 18 days.

Corticosteroids

The rationale for using corticosteroids in COVID-19 patients despite adverse effects, including delayed viral clearance and increased risk of secondary infection, is to lessen the inflammatory responses in the lung tissues, thus preventing the acute lung injury and acute respiratory distress syndrome (ARDS) often seen in severe COVID-19 cases.²² A retrospective analysis of Covid-19 patients (n=201) managed by methylprednisolone showed decreased death rates among those that developed ARDS (46%) vs standard care (62%) (HR, 0.38 [95% CI, 0.20-0.72]).²³

Utilization of dexamethasone (6 mg IV/day for 10 days) in COVID-19 hospitalized patients, as part of the RECOVERY trial, an open label U.K.-based pragmatic trial, improve survival in severe disease by one-third (RR 0.65, 95% CI 0.48-0.88, p<0.001) among patients receiving mechanical ventilation, and by one-fifth (RR 0.80, 95% CI 0.67-0.96, p=0.002) among patients requiring oxygen versus patients receiving standard care. However, dexamethasone showed

no benefit among patients who did not require respiratory support (RR 1.22, 95% CI 0.86-1.75).²⁴

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Hospitals across the world are seeing the important role Patient Blood Management plays in improving patient outcome and optimizing care, as well as the vital part SABM plays in bringing resources to their clinical and administrative teams.

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