THE AMERICAN ACADEMY
OF
CARDIOVASCULAR PERFUSION
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Fall 2026

The Academy Newsletter

Message from the AACP President

Dear Fellow Members,

Albert Camus once wrote that autumn is a second spring when every leaf is a flower. I have always liked that image — the idea that a season so associated with winding down is one of renewal and preparation. That feels exactly right for where the Academy finds itself this fall. The summer was anything but quiet, and as we move into the final stretch of the year, I want to take some time to share what has been happening across the organization, acknowledge the people making it happen, and give you a sense of what lies just ahead.

Behind Every Great Meeting: Our Committees and Fellows

This letter covers a lot of ground, but I know where I want to start — with a genuine, heartfelt thank you to every committee member and fellow who has contributed to the development of the 48th Annual Seminar. Program development for a meeting of this scope is not a single event; it is a months-long accumulation of outreach calls, scheduling negotiations, content reviews, facilitation planning, and creative problem-solving, most of it happening well outside of regular working hours by people who are also full-time clinicians, educators, and administrators.

The Program Committee, Fireside Chat Committee, Sponsor and Vendor Committee, and Emerging Technologies Committee have each done outstanding work. The session lineup taking shape for February 3 through 6 in Salt Lake City — spanning emerging technologies, transplant and organ preservation, artificial intelligence, congenital and pediatric perfusion, administrative leadership, and case science — reflects the breadth of what this community cares about and the seriousness with which our volunteers approach the task of making each meeting better than the last. I am proud of what you have built, and I know our attendees will feel it.

Inside this issue

If you have not yet made plans to join us at the Hilton Salt Lake City Center this February, I encourage you to put it on the calendar. This program will be worth the trip.

With Gratitude: The Palanzos and the Road Ahead

There is no way to write a fall newsletter without addressing one of the most significant organizational developments of my presidency: the transition of the Academy's executive management to the Professional Relations and Research Institute — PRRI — and what that means for David and Jill Palanzo.

David and Jill have given an extraordinary portion of their professional lives to this organization. The AACP they leave behind — its systems, its institutional memory, its culture of professionalism and warmth — reflects years of dedication that most of our members have only partially witnessed. Running the operational machinery of a professional society is invisible work when it is done well, and David and Jill have done it well for a very long time. On behalf of the entire Academy, I want to say plainly: we are grateful. Deeply, genuinely grateful. And we are glad that as we move into this next chapter, David and Jill will have the opportunity to step into less demanding roles — ones that allow them to remain connected to the organization they helped shape without carrying the full weight of day-to-day management.

PRRI brings to the Academy the infrastructure, staffing depth, and association management expertise that a growing organization in a complex professional landscape requires. As our advocacy work expands, our committee structure evolves, and our annual meeting continues to grow in scope, having a professional management partner with a broad view of the healthcare association landscape is an asset we have needed. The Council has ratified the management contract, and the transition is underway. I have every confidence that this partnership will serve the Academy well for years to come, and I look forward to introducing PRRI more fully to the membership as the relationship develops.

Our Future Colleagues: The 2026–2027 Student Leadership Team

One of the most rewarding aspects of this presidency has been watching our student engagement deepen — and much of the credit for that belongs to Allyson Aquino, who has worked tirelessly with our student community to build connection, provide mentorship, and ensure that the next generation of perfusionists feels genuinely welcomed by this organization. Ally's investment in these students is a model of what professional stewardship looks like.

Fostering the growth of our future colleagues has always been a core mission of the Academy, and it is one I take personally. The perfusion workforce is changing — it is younger, more diverse, and shaped by different educational experiences and professional expectations than the generation before it. That is not a challenge to manage; it is a resource to develop. The Student Leadership Team is one of the mechanisms through which we do that.

Dylan Crandall

President | Lipscomb University, Class of 2027 | Wichita, Kansas

Dylan brings a community-builder's instinct to the presidency. His goal is to create a space where students from different programs connect, collaborate, and form the kind of lasting relationships that will serve them — and the profession — for decades to come. He also holds the distinction of having begun his perfusion program fresh off a series of rabies shots, which we will simply accept as evidence of commitment.

Lauren Turner

Vice President | Lawrence Technological University, Class of 2027 | Corpus Christi, Texas

Lauren's vision for the vice presidency centers on energy and connection — inspiring younger students to get excited about this career and fostering creativity and enthusiasm across programs. She has paraglided in Sicily and eaten four dozen oysters in a single sitting (not the same day, thankfully), which suggests she approaches most things with the same enthusiasm she brings to perfusion.

Ashley Fellows

Secretary | Rush University, Class of 2027 | Iowa City, Iowa

Ashley comes to the secretary role with the competitive edge of a former collegiate volleyball player and the warmth of someone who genuinely wants every student to feel represented and supported. She hopes to bring positivity, new ideas, and a strong sense of community to the council — and given that she also manages three dogs alongside her perfusion studies, time management is clearly not a concern.

Please join me in welcoming Dylan, Lauren, and Ashley to their roles. They represent the Academy well, and I encourage every member to make a point of introducing themselves in Salt Lake City.

On the Road: Michigan Perfusion Society and the PERForm Registry

This past summer I had the opportunity to attend the Michigan Perfusion Society meeting held in conjunction with the 62nd Annual Meeting of the Michigan Society of Thoracic and Cardiovascular Surgeons. These joint gatherings — where perfusionists and surgeons share the same educational space — are exactly the kind of collegial environment that moves the clinical conversation forward, and I am always grateful for the opportunity to participate in them.

A significant portion of my remarks and conversations at that meeting centered on the PERForm Registry, and I want to use this space to reinforce why that work matters. The PERForm Registry represents something our field has needed for a long time: a structured, multi-center mechanism for collecting perfusion-specific outcome data and translating it into practice change. At Pulse Heart Institute, we have documented concrete improvements directly attributable to our participation — including refinements in protamine dosing protocols, cardiotomy suction timing, rewarming temperature management, and circuit sizing for specific patient populations. These are not hypothetical benefits; they are measurable changes in how we care for patients.

For a profession that has sometimes struggled to generate its own outcomes literature, the Registry is a genuine asset. I encourage every program that is not yet participating to take a serious look at what enrollment would require. The data we generate collectively strengthens every argument we make about the value of having a certified cardiovascular perfusionist managing the pump — and those arguments have never been more important than they are right now.

Scope of Practice: Nevada, Delaware, and the Work Ahead

If there is a single thread running through the advocacy work of this presidential year, it is this: the scope of practice we have built and the licensure frameworks that protect it are neither permanent nor self-defending. This fall, I want to give you a fuller picture of what we have been navigating.

In Nevada, the threat came from above. The Governor issued an executive order targeting existing professional licensure statutes as a cost-saving measure — and perfusion licensure was in its path. Our community responded with remarkable speed, assembling a remote coalition on barely sixteen hours' notice to oppose the order and place our objections formally in the public record. The breadth of that response — perfusionists, organizational representatives, and allied advocates from across the country — made a difference, and I remain proud of every person who showed up for that call.

In Delaware, the challenge took a different form. Senate Bill 94, as introduced, contained language that would have authorized respiratory therapists to perform all duties associated with extracorporeal life support — including medication administration — in ways that directly encroached on the established scope of practice of certified cardiovascular perfusionists. ECMO and extracorporeal CO_2 removal are squarely within our training, our certification, and our clinical identity. We worked with our coalition partners at AmSECT, the ABCP, the PPDC, and the AC-PE to make that case clearly and forcefully, including a formal request to Governor Matt Meyer that the bill not be signed as written. The bill passed both chambers at the very last minute on July 1st — with House Amendment HA 2 replacing an earlier version — and was sent to the Governor's desk. As of this writing, SB 94 has not been signed, vetoed, or pocket vetoed. Because the Delaware Legislature is now out of

session, the rules and timelines governing the Governor's action are different than they would be during an active session, and the situation warrants continued, careful monitoring. There is still an opportunity to understand the ultimate disposition of this legislation and, if necessary, mount additional advocacy once the Governor acts. I want to be candid: this is not yet resolved, and I will update the membership as soon as we have clarity. What I can tell you with confidence is that our voice was heard, our arguments are on the record, and the coalition that assembled around this bill demonstrated exactly the kind of rapid, coordinated response our profession needs to be able to sustain.

Both situations serve as a sobering reminder of where we stand: we are a small profession doing consequential work in a legislative environment that does not always know we exist — and that combination requires something more than reactive advocacy. We need the infrastructure, the relationships, and the institutional presence to be in these conversations before the legislation is written, not after it is introduced. That requires organized state societies, funded advocacy capacity, and the kind of cross-organizational alignment we are working to build through the ABCP Liaison Panel. It also requires something we have not yet fully developed: a coordinated, formally resourced government relations effort with the collective voice of all five of our organizations behind it. The Nevada and Delaware situations have made clear how powerful that kind of proactive, unified presence could be — and that conversation is very much alive within our coalition. We are making progress, but the work is far from finished, and I want our membership to understand the stakes.

The ABCP Liaison Panel: September and Beyond

The collaborative momentum that began at the February Liaison Panel meeting in St. Petersburg has continued to build. For those just coming to this conversation: the Liaison Panel brings together representatives from the ABCP, AACP, AmSECT, AC-PE, PPDC, and the Canadian Society of Clinical Perfusion — not for annual updates, but for ongoing, working collaboration on the issues that most directly affect the profession's future.

We have an important meeting on the calendar for September, and the agenda reflects the urgency of where we are. Engagement with the Organ Procurement and Transplantation Network around NRP standards, the mechanics of a shared advocacy infrastructure, the question of program growth and workforce sustainability, and the role of AI in certification and competency assessment — these are not topics we will resolve in a single session, but they are topics that need organized, cross-organizational attention, and the Liaison Panel is the right body to provide it.

The formation of this panel as a standing, quarterly body — rather than an occasional convening — is itself a meaningful development. The profession has for too long been represented by organizations that coordinate when convenient and operate independently the rest of the time. The Liaison Panel is a commitment to something different: a shared table, ongoing business, and collective accountability for the direction of perfusion practice in this country. I am genuinely optimistic about what it can accomplish, and I will have more to report after September's meeting.

The autumn ahead is full. There is program work still to finish, advocacy still to pursue, a management transition still in progress, and a meeting in Salt Lake City that is going to be one to remember. I am grateful to be doing this work alongside each of you — and I look forward to seeing many of you in February.

Warm regards,

Bob Grimmett, MS, CCP, FAACP
President, American Academy of Cardiovascular Perfusion
Chief Perfusionist & Director of Perfusion Services
Pulse Heart Institute, MultiCare Health System

NIRS Hemodynamic and Metabolic Assessment of Donation After Circulatory Death Hearts: A Comparative Analysis of Thoracoabdominal Normothermic Regional Perfusion and Ex-Vivo Machine Perfusion

Joshua C. Dollahite

The Texas Heart Institute at Baylor College of Medicine

Houston, Texas

About the Author

Hometown: Atlanta, GA

Interests: NRP and Pediatric Perfusion

Prior to attending perfusion school, Joshua was an NRP perfusion assistant.

"Looking ahead, I aspire to become a highly skilled perfusionist who acts as a pioneer in the field by contributing to advancements in cardiovascular surgery and technology, saving lives, and mentoring future professionals."

Abstract

Donation after circulatory death (DCD) heart transplantation has significantly expanded the donor pool but introduces substantial physiologic challenges related to warm ischemia, reperfusion injury, and myocardial viability. Two dominant preservation strategies—thoracoabdominal normothermic regional perfusion (TA-NRP) and ex-vivo machine perfusion (EVP)—have emerged to address these challenges. TA-NRP restores in-situ circulation under near-physiologic conditions, while EVP provides controlled ex-vivo perfusion in a mechanically regulated environment (Lee et al., 2022). Although both strategies have consistently yielded comparable clinical outcomes, they differ fundamentally in coronary perfusion dynamics, ventricular loading conditions, and metabolic interpretation (Siddiqi et al., 2023; Stehlik et al., 2025). This paper evaluates these differences from a perfusion science perspective, emphasizing preservation of physiologic hemodynamics and limitations in metabolic assessment, and explores hybrid perfusion strategies as a future direction in DCD heart transplantation.

Hemodynamic and Metabolic Assessment of Donation After Circulatory Death Hearts: A Comparative Analysis of Thoracoabdominal Normothermic Regional Perfusion and Ex-Vivo Machine Perfusion

At present, heart transplantation remains constrained by donor availability, which has prompted increased utilization of donation after circulatory death (DCD) donors in an effort to expand the donor pool. According to the current data, it is estimated that heart transplant volume could be increased by approximately 30% through the utilization of DCD donors (Siddiqi et al., 2023). However, unlike donation after brain death (DBD), DCD procurement introduces a period of warm ischemia between circulatory arrest and reperfusion in which a five-minute waiting period is observed to reconfirm circulatory death prior to proceeding with the procurement (Lee et al., 2022). During this interval, myocardial tissue incurs significant damage due to lack of perfusion, warm ischemia, and absence of any myocardial preservation strategy (Lee et al., 2022).

To mitigate these effects, two perfusion-based preservation strategies have been developed and quickly become the new standard in clinical practice: thoracoabdomical normothermic regional perfusion (TA-NRP) and ex-vivo machine perfusion (EVP) (Lee et al., 2022). While both strategies aim to restore oxygen delivery and assess myocardial viability, they differ significantly in preservation environment and perfusion dynamics. Understanding these differences is critical for perfusionists, as accurate interpretation of hemodynamic parameters and metabolic markers directly influences decisions made regarding the donor heart's viability for transplantation.

Evolution of DCD Heart Preservation Strategies

The expansion of DCD heart transplantation has been limited historically by concerns regarding irreversible warm ischemic injury and unpredictable graft via-

bility. As a result, early DCD protocols relied primarily on static cold storage; however, this approach consistently showed increased rates of primary graft dysfunction due to unmitigated ischemia-reperfusion insult/injury.

To address these limitations, two distinct perfusion-based preservation strategies were developed. TA-NRP emerged from the concept of in-situ organ resuscitation, relying on the restoration of oxygenated blood flow to abdominal and thoracic organs under physiologic conditions following circulatory arrest. This approach prioritizes restoration of native hemodynamics and metabolic recovery within the donor environment.

Conversely, EVP technologies, most notably the TransMedics Organ Care System (OCS) (which, at present, is the only EVP device that has been FDA-approved), were developed to maintain donor hearts in a beating, perfused state outside the body. Though this system enables controlled preservation, transport, and functional assessment independent of donor physiology, EVP isolates the organ from systemic influences. Thus, unlike TA-NRP, monitoring of myocardial metabolism and lactate occurs under standardized yet artificial conditions.

These two strategies reflect fundamentally different approaches, both with their own unique advantages and drawbacks. While TA-NRP emphasizes physiologic restoration of the heart within the donor's native environment, EVP emphasizes controlled ex-vivo evaluation and increased efficiency in portability.

Physiologic Basis of DCD Myocardial Injury

Following circulatory arrest, cessation of oxygen delivery to the myocardium leads to a cascade of detrimental effects, beginning with the depletion of adenosine triphosphate (ATP). This ATP depletion prevents the aerobic metabolic pathway and forces myocardial cells into anaerobic metabolism (Lee et al., 2022). Furthermore, utilization of anaerobic metabolism results in lactate accumulation, intracellular acidosis, and failure of ion pumps, leading to rapid sodium and calcium influx within myocardial cells.

Calcium overload is commonly recognized as the principal cause of contractile dysfunction and activation of apoptotic pathways within myocardial cells, while prolonged ischemia increases susceptibility to reperfusion injury through endothelial dysfunction and uncontrolled proliferation of reactive oxygen species (ROS) (Lee et al., 2022). Therefore, these physiologic changes underscore the importance of timely and controlled reperfusion strategies in DCD heart transplantation. The degree to which ATP stores can be restored, lactic acidosis corrected, calcium homeostasis re-established, and ROS damage minimized is highly dependent on the perfusion method and how quickly it is initiated. As such, differences between TA-NRP and EVP are not merely technical but directly influence the extent of myocardial recovery and functional viability for transplantation.

Thoracoabdominal Normothermic Regional Perfusion (TA-NRP)

TA-NRP restores in-situ circulation using extracorporeal support (via cannulation of the donor heart and management of hemodynamic parameters via a perfusionist operating the heart and lung machine) following declaration of death. First, the donor right atrium and ascending aorta are cannulated, and cardiopulmonary bypass (CPB) is initiated. Next, all aortic arch vessels are clamped to ensure the brain is excluded from systemic circulation, allowing selective reperfusion of thoracoabdominal organs. In some instances, lack of cerebral perfusion is further ensured through implementation of a cardiac vent placed in the innominate artery (Lee et al., 2022).

Hemodynamic Characteristics

TA-NRP provides a physiologic perfusion environment characterized by restoration of preload, maintenance of afterload, and preservation of coronary perfusion pressure (CPP) (Lee et al., 2022).

CPP during TA-NRP is defined as:

CPP = Mean Arterial Pressure (MAP) − Left Ventricular End-Diastolic Pressure (LVEDP)

The restoration of this relationship upon initiation of CPB enables accurate assessment of myocardial function under physiologic conditions. Proper management of MAP and LVEDP while on CPB is essential, as elevated LVEDP can impair coronary perfusion despite adequate MAP.

Metabolic Assessment

TA-NRP enables systemic metabolic recovery, including lactate clearance through native hepatic and renal metabolism. As a result, lactate levels reflect whole-body metabolic recovery rather than isolated myocardial activity (Lee et al., 2022). This provides a physiologically relevant assessment of organ viability and its capacity to resume physiologic function in the recipient.

Ex-Vivo Machine Perfusion (EVP)

EVP maintains donor hearts in a normothermic, beating state outside the body using a portable perfusion circuit. Compared to TA-NRP, the key distinctions are the non-physiologic environment and the portability of the perfusion circuit, making it ideal for scenarios in which the donor heart must travel long distances before being transplanted.

Hemodynamic Characteristics

EVP's operation under non-physiologic conditions is significant in that preload and afterload (two fundamental, essential processes within a normal physiologic environment) are absent, with coronary perfusion being driven by externally controlled pressure rather than pressure gradients acting as the primary driver of blood flow (Lee et al., 2022). As a result, coronary autoregulation is reduced and the workload of the myocardium is drastically altered.

Metabolic Assessment

Metabolic evaluation of the EVP-managed donor heart relies on lactate trends within the isolated circuit. Unlike TA-NRP, these values reflect myocardial metabolism alone and are not influenced by systemic clearance mechanisms (Stehlik et al., 2025). Due to this limitation, the interpretation of graft viability becomes complicated and unverifiable, raising yet another concern for those assessing the donor heart's viability for transplantation.

Comparative Hemodynamic and Metabolic Analysis

TA-NRP and EVP represent fundamentally different approaches to myocardial assessment. TANRP preserves physiologic relationships between pressure, flow, and ventricular loading, while EVP provides a controlled, portable, and artificial environment (Lee et al., 2022). Despite these physiologic differences, the clinical outcomes remain comparable, with similar short-term survival and graft function reported in recent transplant literature (Siddiqi et al., 2023; Stehlik et al., 2025).

From a practical perfusion standpoint, these differences have direct implications for intraoperative decision-making and graft acceptance. In TA-NRP, perfusionists can titrate flow and pressure in real time to evaluate the response of the myocardium under physiologic loading conditions, providing a well-informed assessment of cardiac reserve and recovery. In contrast, adjustments made within the EVP circuit are primarily influenced by perfusion parameters within a closed circuit, limiting the ability to assess how the heart will respond to systemic demands posttransplantation. This distinction becomes particularly relevant when evaluating marginal donors, as subtle impairments in contractility and coronary reserve may not be observed until the donor heart is placed under physiologic, systemic stress conditions (in the recipient). Consequently, relying solely on ex-vivo metrics risks overestimating graft viability in certain contexts. Thus, when evaluating marginal donors, physiologic assessment of the donor heart prior to transplantation may provide significant advantages in determining graft viability (Siddiqi et al., 2023). While still on CPB during the TA-NRP procedure, clinicians can utilize technologies such as transesophageal echocardiography (TEE) to obtain additional diagnostic information regarding the donor heart. Utilization of TEE, a staple in open-heart surgery, enables the surgical team to assess ventricular wall motion abnormalities, valvular function, chamber dimensions (useful in identifying both dilation and hypertrophy), and pressure gradients, all in real time. This additional diagnostic information is critical, providing the accepting center with functional data regarding myocardial performance and adapta-

Figure 1: Comparison of Hemodynamic and Metabolic Characteristics: TA-NRP vs. EVP

TA-NRP (In-Situ Perfusion)	EVP (Ex-Vivo Perfusion)
• ECMO-based circulation	• Pump-driven perfusion circuit
• MAP: 60–80mmHg	• Pressure-controlled coronary flow
• Preload: Present	• Preload: Absent
• Afterload: Present	• Afterload: Absent
• Coronary Perfusion Pressure: CPP = MAP – LVEDP	• Coronary Perfusion Pressure: CPP = Pump Pressure – Circuit Resistance
• Intact coronary autoregulation	• Little or absent autoregulation
• Native ventricular loading conditions	• Unloaded beating heart
• Restoration of systemic circulation	• Isolated perfusion environment
• Lactate value representative of whole-body (systemic) metabolism	• Lactate value representative of myocardial metabolism only

***Key Distinction**: TA-NRP evaluates cardiac function while preserving physiologic conditions and coronary autoregulation, whereas EVP evaluates function in a controlled, artificial environment that is non-physiologic (Lee et al., 2022).*

bility under near-physiologic conditions. Armed with this information, clinicians can transform what was initially a theoretical prediction of myocardial viability into objective evidence of functional viability. Therefore, this additional information is invaluable, particularly when evaluating marginal donors.

Future Directions: Hybrid Perfusion Strategies

Hybrid approaches combining TA-NRP and EVP represent a promising evolution in DCD heart transplantation. While each method independently addresses key limitations of DCD procurement, their integration has the potential to create a more comprehensive and physiologically sound preservation strategy.

TA-NRP enables immediate restoration of oxygenated blood flow under physiologic conditions, allowing for real-time assessment of myocardial function in the presence of native preload, afterload, coronary autoregulation, and renal and hepatic metabolism. This method is particularly valuable for evaluating marginal donors, as it provides insight into ventricular performance, hemodynamic stability, and systemic metabolic recovery. Despite the advantages of EVP, these physiologic parameters cannot be fully replicated in isolated ex-vivo systems (Lee et al., 2022). However, TA-NRP is limited by logistical constraints, including the need for specialized surgical coordination and restricted transport windows.

Transitioning the heart to the EVP device following initial TA-NRP recovery may address these limitations by providing extended preservation and controlled transport. The EVP device provides a stable, normothermic environment in which coronary perfusion can be maintained during transit, thereby reducing cold ischemic time and expanding the geographic range of organ allocation (American College of Cardiology, 2025). Additionally, this transition may also allow for continued metabolic monitoring after a TA-NRP recovery, providing ongoing, real-time data to support clinical decision-making during post-procurement allocation and transportation.

From a perfusion standpoint, the hybrid model introduces a unique opportunity to combine physiologic assessment with controlled preservation. TA-NRP serves as a “functional stress test” under physiologic conditions, while EVP preserves myocardial viability after initial recovery and offers greater flexibility in transpor-

tation. This dual approach may be particularly advantageous in cases involving prolonged warm ischemia and/or marginal donors where graft viability is uncertain.

Despite its theoretical advantages, the hybrid approach also introduces new challenges. Transitioning between perfusion systems may expose the myocardium to additional ischemia reperfusion cycles, potentially increasing oxidative stress and endothelial dysfunction. Furthermore, inconsistencies in metabolic markers—particularly lactate—between in-situ and exvivo environments may complicate assessment of the graft's viability. Thus, standardization of protocols, particularly in the timing of transition from in-situ to ex-vivo and clearly defined metabolic targets, will be essential to ensure consistent outcomes across the nation.

As DCD heart transplantation continues to evolve, hybrid perfusion strategies may represent the next major advancement in the field. By integrating the physiologic environment of TA-NRP with the logistical flexibility and extended preservation capacity of EVP, this approach has the potential to improve DCD donor utilization, enhance graft assessment, and ultimately expand access to lifesaving transplantation.

Conclusion

TA-NRP and EVP represent two distinct yet complementary strategies in DCD heart transplantation. While both approaches have demonstrated comparable clinical outcomes, their underlying physiologic differences have important implications for how myocardial viability is assessed and interpreted.

TA-NRP provides a uniquely valuable platform for evaluating cardiac function under physiologic conditions. By restoring systemic circulation and preserving native ventricular loading, it allows for dynamic assessment of hemodynamics, coronary perfusion, myocardial work, and metabolic recovery. This physiologic environment offers a more comprehensive and accurate representation of how the donor heart will perform following transplantation, especially in the context of marginal donors.

In contrast, EVP offers a controlled, artificial environment that facilitates extended preservation and greater flexibility in transportation. Although it lacks the complexity of in-vivo physiology, its ability to maintain a beating heart during transit is a significant advancement in organ preservation technology. However, the absence of preload, afterload, and systemic metabolic assessment necessitates careful interpretation of hemodynamic and metabolic parameters, particularly when relying on markers such as lactate (Stehlik et al., 2025).

From a perfusion science perspective, the key distinction between these modalities lies in the balance between physiologic adherence and environmental control. TA-NRP prioritizes maintenance of native cardiac function, whereas EVP prioritizes stability and logistical optimization. As documented in recent transplant literature, neither approach is inherently superior; rather, each method offers unique advantages that can be selectively utilized based on the clinical context, the recipient, institutional guidelines, and logistical considerations.

Looking forward, the integration of these strategies through hybrid perfusion models may offer the most comprehensive solution. By combining physiologic assessment with extended preservation, such approaches have the potential to reduce uncertainty in graft selection, improve utilization of marginal donors, and expand the reach of DCD heart transplantation.

Ultimately, as perfusion technology continues to advance, the role of the perfusionist will become indispensable to transplantation success. Thus, it is essential that perfusionists understand the hemodynamic and metabolic principles underlying these systems, in order to optimize outcomes, provide patient-centric care, and drive innovation in the field.

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The Academy's New Executive Director

The Executive Director Search Committee carefully reviewed all applicants through interviews, discussion, and thoughtful consideration of the Academy's current needs and future goals.

After completing this process, the committee has selected PRRI (Professional Relations and Research Institute, Inc.) to serve as the next Executive Director of the American Academy of Cardiovascular Perfusion.

This decision was made after careful evaluation of each organization's qualifications, experience, and vision for the Academy. Both organizations demonstrated professionalism and a sincere interest in supporting AACP. Ultimately, the committee felt that PRRI's extensive experience managing professional societies, along with their strategic approach and understanding of association leadership, best aligns with where the Academy is today and where we hope to go in the future.

We were especially encouraged by PRRI's vision for helping the Academy continue to grow while building on the strong foundation that has already been established. We are confident that their experience and leadership will help move AACP forward and continue providing outstanding service to our members.

To help ensure a smooth transition, the Academy will retain a Fellow Member to serve as a consultant and liaison between PRRI Management and the AACP Council throughout the transition process.

On behalf of the Search Committee and Council, I would like to thank all for the trust placed in us during this process. We believe this decision positions the Academy well for continued growth and success, and we look forward to working with PRRI as they begin this new role.

Sincerely,
Allison Weinberg, CCP, MHA, FAACP
Search Committee Chair
American Academy of Cardiovascular Perfusion

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Speed
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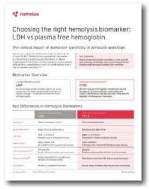

Earn ABCP Category I CEUs with our on-demand AmSECT webinar

Tune in for a deep-dive session with Dr. Tim Maul where he provides a practical look at how transitioning to specific, quantitative markers can enhance the documentation of blood quality and device performance.

Timothy Maul, CCP, FPP, PhD
Senior Research Scientist and Perfusionist, Nemours Children's Health Florida
ELSO Innovation and Technology Committee Chair

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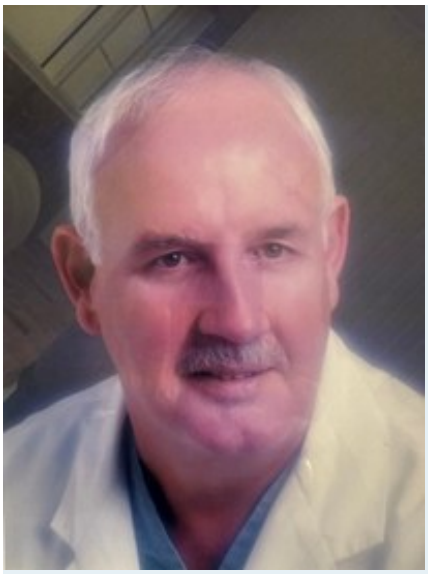

Jim MacDonald. CPC (Ret) CCP (Emeritus)

Former Chief, Clinical Perfusion Services, LHSC

Past President & Senior Fellow AACP

Past President CCCP

Senior Fellow, AmSECT

Ilderton, Ontario, CANADA

Reflections From The Formative Years Of Cardiovascular Perfusion

INTRODUCTION

There are times in our professional lives when it is worthwhile to pause, to take a look back, and to remember where we came from!

For those of us who had entered, what would eventually be known as Cardiovascular Perfusion, the journey was unlike anything familiar to those entering our profession today. Open-heart surgery was certainly within its evolutionary stage! Extracorporeal technology was developing almost daily. The role of the "pump tech" had yet to become the profession recognized designation, that of Cardiovascular Perfusionist.

I began my perfusion career in 1968, more through serendipity in my being, fortunate enough, to have been in the right place and, at the right time. I had, unknowingly, become part of an era in which the cardiac surgeon, the pump technician and the anesthesiologist would share in a unique evolving, but ever interdisciplinary, relationship! We were there to witness the continued evolution, modification and refinement of an important, but still primitive, extracorporeal tool called cardiopulmonary bypass (CPB). Those early years were demanding. Corrective open-heart surgery for congenital heart disease in the infant and acquired valvular disease, in the adult, was fraught with daily concerns. The learning curve, for all three merging disciplines, was steep, and the malfunctions of the pump oxygenator often mirrored the surgical and anesthesia challenges of the day. As I look back now, however, I realize that those difficult years provided something far more important than technical experience. They were to have taught us lessons about responsibility, humility, teamwork, compassion, professional commitment and the very reality being supported within our, constantly, learning from one another. Within, I will share some of the lessons that were to serve as my guide, throughout my professional life.

THE FORMATIVE YEARS

In those early days, the cardiac surgeon, the pump technician and the anesthesiologist developed professional interdependency that would become the foundation for mutual respect, cooperation and shared clinical accountability. Dr. W. G. Bigelow, one of Canada's pioneering cardiac surgeons, recognized the emerging importance of the perfusionist when he had observed that a new specialty had evolved with the advent of the heart-lung pump: "the responsibility of running the pump was considerable. It involved careful cleaning and assembly, adjustment of blood flow, pressure and temperature, blood analysis and the administration of additives. There were hair raising experiences that tested stability, courage and judgment. I always thought that patients never got enough credit for having courage to move forward with their surgery." These words remain as an accurate depiction!

Across North America and elsewhere, there were common clinical reality. The day began early and often ended late, sometimes with less-than-desirable surgical results. Excessive cardiotomy suction produced foam. Pump oxygenator blood leaks were an everyday accompanying reality and adult, whole-blood primes, of 4 liters, were the common non-hemic prime. Stainless-steel connectors were part of the circuit. The extracorporeal circuits were very complex, non-disposable systems. They had to be hand-washed, reassembled, packaged in muslin wrappers and steam-autoclaved - a wash and reassembled process, that could take several hours.

The experimental animal laboratory, if one had such exposure, had become our important testing ground. Within Dalhousie University, Halifax, our surgeons and pump technician refined their collective expertise, explored new surgical techniques and investigated modifications to the pump oxygenator before introducing, same, into an ever changing and renewed clinical reality. The Mayo Gibbon Vertical Screen Oxygenator and the Viking Bjork Kay Cross Rotating Disc Oxygenator were the pump technology of that era. The latter being the oxygenator on which I trained. Those earlier pump oxygenators machines were to leave a lasting impression on whomever had trained on them! It became increasingly apparent that more futuristic methods of supporting the circulation and providing extracorporeal gas exchange, would be necessary if increasingly complex cardiac lesions were to be treated, successfully, by way of direct vision open heart surgery!

The pioneering work of Dr. Walton Lillehei and Dr. Richard DeWall, with their disposable bubble oxygenator design, was to have paved the way for commercially available, "low-prime disposable bubble oxygenators" in the late 1960s into the early, 1970s. For the pump tech, this was both a welcome transformation and a much needed, realization. Gone were the many hours having been spent involving the laborious but meticulous cleaning and reassembly of the pump oxygenator no longer being required. More importantly, the associated pathophysiology of ECC was beginning to surface and to be understood.

At the same time, myocardial protection remained a major challenge. Anoxic arrest with the surgeon trying to beat the "tic tok" of the clock, the electrical fibrillation technique and the, ever dreaded possibility of ischemic contracture or "stone heart" syndrome, as described by the late, Dr. Denton Cooley, could be the ugly realities of our clinical experience. Our history would show myocardial protection, of the isolated heart, would continue to evolve and eventually include direct coronary ostial perfusion with oxygenated extracorporeal blood. But that, in and of itself, is certainly deserving of, yet another historical interventionist story!

What is important is the surgeons, pump technicians and anestheologist, of that generation, had learned to depend upon EACH another! The concept and the nexus of the word "TEAM", was knowingly or unknowingly, being developed into a renewed clinical reality! Respect grew from our interdependence on each other! Cooperation became essential and shared responsibility became the foundation of our developing profession. From those exacting beginnings, grew my deepest respect for the open-heart surgical patient and the enduring pride in having been part of that initial era. Likewise, and as such I remain, particularly proud, of having carried the initial professional designation of OJT or, "On the Job Trained!

THE EXCHANGE OF IDEAS

The worldwide period of intense activity in cardiac surgery during the 1950s and 1960s created an environment in which ideas could be shared, challenged and refined. Research involving hypothermia, oxygenation and blood pumps was no longer confined to individual clinical interface experiences! Surgical meetings became the fertile ground for exchanging clinical experiences, scientific data and developing new approaches. A major worldwide historical milestone had occurred on May 6, 1953, when Dr. John Gibbon at Jefferson Medical College in Philadelphia had performed the world's first, successful open-heart surgery, that being, closure of an atrial septal defect on 18 year old, Cecelia Bavolek using the Gibbon Model 11, IBM, pump oxygenator! It would be, just three years later, Canada would experience an identical open heart surgical milestone, on September 8, 1956, when Dr. John Callaghan, at the University of Alberta Hospital, "performed our first successful Canadian open-heart surgery", using the Lillehei-DeWall bubble oxygenator, to close an ASD,

on 10 year old, Suzanne Beattie. These achievements represented more than isolated surgical successes . They were the catalyst for opening the door for open heart surgery within both the United States as well as in Canada.

The same spirit of exchange eventually would become an important part of our developing perfusion profession. Local and national meetings provided opportunities to discuss clinical successes as well as failures. They allowed the pump technicians, of that era and, later, our new professional designation as that of Clinical and/or Cardiovascular Perfusionists to realize the problems encountered in one institution, were often remarkably similar to those encountered elsewhere.

The development of professional organizations and educational standards were soon to follow. Within the United States, the American Society of Extracorporeal Circulatory Technology (AMSECT) and our Canadian counterpart, the Canadian Society of Extracorporeal Circulatory Technology (CANSECT) meetings had begun! Our first CANSECT meeting was held in Halifax, Nova Scotia, in 1968 at the Lord Nelson Hotel. I remember that meeting well. My job, as a student, was to serve coffee, speak when spoken to and hope to be invited out for the evening's festivities. Those early meetings were more than social gatherings. They were the beginnings of a shared professional identity, and that very important word, "collegiality" was in its immediate offing!

The Professional Building Blocks

So, what did those formative years teach us? Our professional growth depends upon several interdependent factors or what I had often referred to as those, "essential building blocks", that have remained important throughout my career. We continue to learn from our colleagues and to take that acquired knowledge back into our individual hospitals to share within each of our cardiac teams. The ultimate purpose is simple: **to improve the care and outcome of the cardiac patient.** Professional growth requires continued learning. It requires open discussion. It requires the willingness to acknowledge what we do know, what we may not know and to learn from those colleagues around us, who do know! Each of us therefore shares a common journey, that being, directed toward ongoing improvement in our daily cardiac patient care by way of our established self-reliance upon, our acceptance of and our developing respect for, one another. A red cardinal, its color faded with time, has sat in my garden for many years. Etched into the stone beneath it are the words of William Blake: "no bird soars too high if he soars with his own wings." I have come to understand those words differently over the years. A successful professional journey is not simply about individual achievement. It is about recognizing that "WE" become stronger by sharing "OUR" knowledge and experience with one another. The most sublime act we can show each other, is to set others before oneself. With humility and respect, these are some of the lessons I have learned.

LESSON 1 - ORGANIZATIONAL COMMITMENT:

Commitment to our profession involves both our individual and collective identification with our peers. Organizational commitment is an expression of one's character. It reflects dedication to shared goals and a willingness to participate in the professional lives of those around us. As the years go by, commitment should demonstrate our continuing desire to improve our clinical competence, thereby, one contributes to the growth of our profession.

Productivity is never an accident. It is the result of commitment to excellence, intelligent planning and a shared focus directed toward continuing development and personal professional satisfaction. Limiting one's involvement, within professional organizations, also limits the opportunity to broaden ones clinical knowledge and perspective. Any such professional involvement requires time and dedication. It may involve hours of self-imposed commitment to professional values and a willingness to serve one's colleagues and, ultimately, the direct recipient of our specific care, our cardiac patient!!

Throughout my career I have encountered individuals whose names became synonymous with organizational commitment. They did not simply talk about professional responsibility - they lived it. Their involvement formed the brick and mortar that helped bind our profession together. As such, organizational involvement opens the door to continuing professional growth but, "it is one's organizational commitment that would insure, that very door, would remain, open"!

LESSON 2 - PROFESSIONALISM REVISITED:

What are the qualities that would allow us to call ourselves professionals? Professional behavior demands that we avoid actions or decisions that could bring our profession into disrepute. That's why we have Standards of Practice and Code of Ethics! To be recognized as a professional requires more than acquiring technical knowledge. It requires ongoing education, training, ethical conduct and within our profession, specific clinical accountabilities and unique responsibility and, lastly, a commitment to service! While professional status is one thing, living one's profession is another. A professional accepts responsibility for maintaining knowledge and skills, belongs to a professional organization, demonstrates a service orientation and exercises appropriate autonomy, within the limits of his/her specific accountabilities. For the cardiovascular perfusionist, these principles must be demonstrated every day.

Professional accountability means willingly adopting and consistently applying the knowledge, the skills and values of our chosen profession. Our conduct within the operating room is a reflection of that integrity. Professional autonomy provides the authority to make appropriate clinical decisions and "the freedom to act according to one's professional knowledge and training". It should be noted, however, autonomy without integrity is meaningless. Integrity means trust. It means reliability, honesty and courage and it is reflective of the strength of one's character. Within a well-coordinated open-heart team, these qualities are essential given the responsibility placed on our shared profession by the very public, we daily serve! At the end of the day, professional autonomy, blended with doses of another characteristic, namely integrity, should always be the essential ingredient within a shared clinical reality. The acronym for the word "TEAM, simply said is, "together, everyone accomplishing more"! It is a responsibility incumbent upon each individual, within our interdisciplinary open-heart team!

LESSON 3 - COMMITMENT TO THE PATIENT, A SHARED RESPONSIBILITY:

One of the major building blocks, within our professional identity, is our commitment to the cardiac patient. Being a Cardiovascular Perfusion involves much more than establishing an extracorporeal circuit and conducting cardiopulmonary bypass. Much more would be expected of us. We are entrusted with the care of another human being at one of the most vulnerable moments of that person's life. They are our patients! The human body must never be regarded simply as a complex machine that can be repaired through extracorporeal, surgical or anesthetic technology, in isolation of our recipient patient! Our technology is important - our knowledge is essential but neither replaces compassion, empathy and caring. The patient is not merely the recipient of our technology. The patient is a person who has entrusted us with his or her, very life. I suggest this, not because you would not know it, but as a reminder of whom we serve, the public at large. Kindness matters!

Of clinical interest, there are times when the perfusionist's contribution may go unnoticed, precisely, because everything appears to be routine and continuous to go well. This is what I personally have referred to as, "the paradox of our profession". When we perform our responsibilities without patient related incident, our autonomy may be invisible but our responsibility still remains consequential. We belong to a quality-controlled profession. We rely upon the success of one another as we would, also, learn from our professional misadventures. The words accident and/or mishap are well published within our printed literature! Should a colleague experience a perfusion mishap, the appropriate response should never be to push that person down. We should learn from such extracorporeal misadventure, thus the saying, "there, but for the grace of God, go I"!

We must be protective of the trust placed in us by our patients. Our caring for the patient should not, necessarily, always be confined to the heart-lung machine. Sometimes it is as simple as walking over to the stressed patient, taking their hand and introducing yourself as a member of the cardiac team. That small gesture can establish a human connection that technology alone can never provide. Have you ever extended this kindness to an infant or child about to undergo open heart surgery? Our actions and deeds define who we are. Our humility and compassion define us. We must never allow ourselves to treat only the disease and not the patient. This shared responsibility is encompassing within this word, TEAM: "together, everyone accomplishes more"!

I was reminded of exactly that, all those many years ago, when I came across a letter from the family of a patient who had experienced a difficult recovery following cardiac surgery. The letter, written in October 1990, said: "He was in God's hands but ALL OF YOU WERE THOSE HANDS, while in your care." Those words are reflective of what we share within our hospitals and within our cardiac teams. The patient may never know the name of every person who cared for them but, my experience had taught, the patient's family might realize exactly who you are and why you are there, i.e, ECMO, Ventricular Assist, IABP, etc. Within that ongoing clinical interface reality, you may be singled out, for what you would do! There's that societal expectation we don't always, as easily, allow to surface - but when and if it does, your empathy will be understood and, perhaps, rewarded by a thoughtful letter of gratitude?

LESSON 4 - THE MENTOR/MENTEE RELATIONSHIP:

For many of us, teaching students can be one of the most rewarding responsibilities and challenging responsibilities of our careers. The mentor shares clinical experiences gained over many years and provides guidance, motivation, emotional support and role modelling. Theory having been introduced in the classroom would, next, become your student's clinical reality. Allowing your student to express, what they had already been direct witness to, within another clinical phase or rotation, when appropriate, allowing them to experience a possible different approach, i.e, their explaining a different cardioplegia delivery method, etc., or their teaching you some aspects you might have forgotten or, you're not having known, at all! For myself, it has been an exciting and humble experience to share my clinical knowledge with students who completed rotations within the London Health Sciences Centre and with students, whom I had interacted, beginning in 1978, at The Michener Institute of Education, in Toronto.

Teaching requires more than demonstrating technical skills. From the beginning, the student should experience an atmosphere of respect, honesty, cooperation and integrity. As importantly, the student should not be shielded from any of the many realities of clinical practice. They should learn both the lessons of success and the enduring probability of failure. Is this not part of the learning process? Sometimes the most important lesson, in teaching, is knowing when to ask another colleague, seek additional information or admit that we do not know. This is where collegiality becomes so important. Continued education and clinical experience should be accompanied by gained humility. My own career has taught me that experience can provide both pride in what we accomplish and humility, in respect, to how much we continue to learn! There is no room for complacency within the open-heart team!

The student must also decide should the mentor's actions be worthy of being followed. Might we be demonstrating the professional behavior we would want our students to emulate? If our student is our future, their successful integration, into our profession, must be encouraged within the knowledge that, one day soon, the student would become, "the mentor". To those entering the profession, I would say: "you now have a professional voice" - how you might use it, depends on yourself. Take an active role, not only in your professional growth but in that of others. Give of your time and share in what you have learned! Ask questions, actively participate and become involved. Your involvement, with your peers, will help to determine the future of cardiovascular perfusion. It's what I had always referred to as "the low hanging fruit"!

LESSON 5 - PEER INVOLVEMENT AND ITS RESPONSIBILITIES:

As just referenced, another essential building block, I have learned over the decades, is the importance of peer involvement. Peer involvement creates an avenue for the exchange of clinical research, related experience and provides the fertile soil for ongoing ideas. It reminds us that we serve a common cause. It encourages participation. It creates professional identity and, more importantly, it provides an opportunity to learn from one another. Collegiality and peer involvement, in my opinion, are synonymous. It is by way of our direct involvement with colleagues that we can focus on common concerns, share collective knowledge and contribute to the development of evidence-based perfusion as well as specific and recognized standards of cardiac-related extracorporeal patient care.

Within a peer group, we become a reflection of one another. Therefore, we should preserve, enhance and complement the professional image of our colleagues. Peer recognition should never be taken for granted! Nor should it ever lead to a feeling of superiority. Superiority, which would be readily observed, can only serve to damage one's professional image and, to diminish one's acceptance, as a respected colleague. We should be as concerned with our character as we are with our reputation. Basketball coach, John Wooden, had provided us his distinction between reputation and character when he wrote: **"worry more about your character than your reputation - character is who you are on the inside, while reputation is how others see you on the outside - in other words, reputation is your demonstrated personal morals, values and ethics!**

The ability to listen and to learn from one another is one of the greatest rewards of both peer and organizational involvement. Over my own career, I know I sometimes had to work harder to accept additional responsibility within my professional community but, that very effort was to provide the essential nourishment for both my personal and my ongoing professional growth. There is a huge chasm between mediocre participation and meaningful involvement. Meaningful involvement requires responsibility. It requires work. It requires commitment and it is representative of a professional opportunity presented to each of us. Our patients, the silent recipients of our specialized profession care (which is, society at large), do expect nothing more or nothing less! Peer involvement is therefore not simply an optional activity. It is an added responsibility within our SHARED, professional journey.

THE PEOPLES WHO "SHARED THE JOURNEY"

When I look back upon the formative years of open-heart surgery and, your and my cardiovascular perfusion interface, I do not remember only the complex pump oxygenator, surgical procedures and technical developments. I remember my colleague! The development of any open heart cardiac surgical program was never the achievement of one individual. It was the result of many people contributing their individual but shared knowledge, skills, courage and commitment. Within London, Ontario, the development of Clinical Perfusion Services, was similarly built by people who accepted a shared responsibility and who had helped establish a service that had become an integral part of the cardiac surgical community, at large. Among those who contributed to that history were colleagues from both Victoria Hospital and University Hospital, including Perfusionists, Constance (Gus) Fabrikis, Maurice Martin, Judy Won Stevens and Peter Allen**,** formerly from Victoria Hospital, and together, with colleagues such as Andrew Cleland, Richard Mayer and Mark Henderson, all of whom are, also, now retired. Each contributed, in his or her own way, to the development of the Clinical Perfusion Services, University Hospital, London, Ontario. Names can sometimes become little more than entries in a historical record. For those of us who were there, however, every name represents a person, a friendship, a lesson, an unforgettable personal and/or clinical experience. That is why preserving the names and stories of those who helped build the profession matters! They were part of our shared history and that history belongs to all of us.

My HALIFAX CONNECTION

My own journey in perfusion also has a particularly meaningful connection to Halifax, Nova Scotia. Halifax was an important part of my early development within Canadian Cardiovascular Surgery and pump oxygenator support. The opportunity to learn, observe and participate in a developing profession provided experiences that would shape many of us. Similar to our American and European colleagues, the early Canadian perfusion community was small and, because it was small, professional relationships were personal. We began to get to know one another. We shared ideas. Although we might sometimes disagree we, nonetheless, were to learn from one another and, from within that clinical reality, we developed friendships that have endured for decades as I had mentioned above. Looking back, I realize how fortunate we were to have been part of that community at such a pivotal time. Similar to the Anestheologist, the Cardiac Surgeon and the earlier Pump Techs, making history, was far from our required objectives. We were simply doing our jobs while being exposed to an, ever challenging, clinical environment! But, as you might know, any or all history might often present that way. Serendipity, success, failures and happen chance, were to provide that fertile ground given the vulnerability of that era. We, unknowingly, were witnessing our own historical development! If this be true, we owe each other, it's history remembering and telling, with honesty, accuracy and a dash, of pride! Our history must not be, as easily forgotten and, in that, would deserve, one's, telling!

THE IMPORTANCE OF REMEMBERING

As the years pass, those of us who experienced the formative years of cardiovascular perfusion become fewer. President Harry Truman once said, "the only thing new, in the world, is the history you do not know"! That makes our remembering our past, increasingly important. The younger generation would now work with extracorporeal technologies that would have seemed almost unimaginable to those of us who began within the era of pump oxygenator support. Modern perfusion has become sophisticated, evidence-based and professionally regulated. That progress is something to celebrate BUT, any such extracorporeal progress should never cause us to forget the foundation upon which it was formulated and built!

Today's technology exists because yesterday's pioneers were willing to push the envelope, to experiment, to question, to modify and, yes, to experience, both success and the ever-looming threat of failure. The profession exists not only because of our initial clinical interface - but people also came to understand, finally, the need to organize themselves, to teach one another and to establish clinical as well as professional standards. This professional progress will continue but only if every generation accepts the responsibility of teaching the next.

History is therefore not simply about looking backward. It is about understanding where we came from so that we can better appreciate where we are going. History is never static! As I might have mentioned previously, every time you assemble, prime and conduct cardiopulmonary bypass, it is in your doing exactly that, you TOUCH the very essence of your historical extracorporeal component past, into your present-day clinical reality! Occasionally, while conducting CPB and while, in those quiet moments scanning your ECC, you might give thought, in regards the unique history of each your extracorporeal component, before yourself? I don't mean that as a distraction, though!

CLOSING REFLECTIONS

As I look back over five decades within cardiovascular perfusion, I recognize that the greatest rewards of my career were not found solely in the developing of extracorporeal technology, the operating room or the procedures themselves. They were found in the individuals, the surgeons who taught me, the perfusionists who worked beside me and the nurses and anesthesiologists who had shared in the responsibility, in the

students who challenged me to explain what I thought I already knew and the colleagues who became life-long friends. And, above all, the patients and their families who entrusted us, with our caring and sharing, given their acquired and congenial, heart disease!

My professional journey began in an era when cardiac surgery and extracorporeal technology were still evolving. I was, in retrospect, most fortunate to be have been there. I was fortunate to learn, and I was fortunate to have been surrounded by people who were willing to share what they knew. As only life would show, as the preceding years would pass, those of us who experienced the formative years of cardiovascular perfusion, become fewer. That reality would now insist on the responsibility of remembering and sharing this history, to become even more important. History is not simply a collection of dates, machines and surgical milestones. It is the story of people, it is the story of courage, it is the story of mistakes and lessons learned, it is the story of perseverance. It is, also, the story of professional relationships that developed because people had come to understand they could accomplish much more, together, than they could ever had accomplish alone!!

As my mother had often reminded myself, "Jim, it is not only important what you might say, it is also as important in how you might choose to say it." I hope these reflections have expressed not only what I learned but also how deeply I have valued the people with whom I had shared, within this journey. I will never set aside my inherent respect for our chosen profession, our specialized responsibility to the cardiac patient nor my, always, caring for those who have been my student, turned colleagues and who, had turned, friends. One's professional and extracorporeal and mechanical assist technology will continue to change as will, also those entering our profession would change but, the fundamental responsibilities, before you every day, will always remain: to teach, to listen, to share and to care and to always remember the patient is at the center of everything we would do!

I am strengthened by the realization that those who would follow would continue to share in one another's journey and will continue to build upon the lessons learned by those who had come before them. I have been the beneficiary of many wonderful memories and friendships throughout my professional life. For that, I remain deeply grateful as I return, once more, to the written but thoughtful words, by that grateful family, in 1990: "ALL OF YOU ARE THOSE HANDS WHILE IN YOUR PATIENTS CARE." Perhaps that is, after all, the simplest description of who we actually are? May those many hands continue to be guided by knowledge, experience, humility, compassion and respect! And may these essential lessons, having been shared, during these formative and ongoing years of cardiovascular perfusion not be, as easily, forgotten. We should remind ourselves, "each of us are a little bit of all of those with whom he had trained"!

With much respect, your colleague,
Jim

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Cardiopulmonary Bypass Management During Aortic Root Replacement in a Patient With Systemic Lupus Erythematosus, Rheumatoid Arthritis, and Dysautonomia: A Case Report

Abstract

A 52-year-old woman with systemic lupus erythematosus, rheumatoid arthritis, and a diagnosed autonomic nervous system disorder presented with an aortic root and ascending aortic aneurysm and underwent an ascending aortic replacement on cardiopulmonary bypass. Anti phospholipid antibodies, a marker strongly associated with thrombotic and hemorrhagic complications in SLE patients undergoing cardiac surgery, had not been checked preoperatively. The interoperative course was uneventful, without bleeding, weaning difficulty, or arrhythmia, and circulatory arrest was not required. This case is presented to review the perfusion related risks posed by SLE, or a comma and autonomic dysfunction and cardiac surgical patients into discuss how the absence of preoperative antiphospholipid testing shaped the anticoagulation strategy available to the team.

Introduction

Aneurysmal disease of the aortic root and ascending aorta is most often attributed to degenerative or hypertensive changes in the aortic wall, but a meaningful subset of cases arises from connective tissue and autoimmune disorder. The 2022 ACC/AHA guideline on aortic disease recommends elective repair of a sporadic aortic root or ascending aortic aneurysm once the diameter reaches 5.5 centimeters, or 5 centimeters at centers with an experienced multidisciplinary aortic team. The threshold is lowered further in patients with heritable connective tissue disease given their higher risk of dissection at smaller diameters (Isselbacher, 2022).

Systemic Lupus Erythematosus (SLE) is an uncommon but recognized cause of aortitis in subsequent aortic root or ascending aortic aneurysm formation. Inflammatory infiltration of the aortic wall, cystic medial degeneration, and long-term corticosteroid exposure have all been implicated in aneurysm formation in SLE patients. Case reports have described aortic root replacement as definitive treatment when aortitis has already produced aneurysmal dilation (Brinster et al., 2009).

SLE patients undergoing cardiac surgery carry additional risk beyond the aortic pathology itself. For example, anti-phospholipid antibodies, present in roughly 40% of SLE patients are predisposed to both thrombotic and hemorrhagic complications during and after CPB. Moreover, a positive antiphospholipid profile has been directly associated with valvular, coronary,

About the Author

Born and raised in Akron, OH, Niki was a Physical Therapist Assistant (PTA) prior to beginning her journey as a Perfusionist at Emory University's Master of Cardiovascular Perfusion Science program in Atlanta, GA. During her time as a PTA, Niki helped many individuals regain their independence after illness, injury, or trauma. She served as Co-Chair of the Employee Advisory Group and was chosen from 10,000 employees as the hospital's Employee of the Month. She was also a member of the department's Evidence-Based Practice Committee and participated heavily in the early mobilization of patients on ECMO. Niki is a current member of AmSECT and AACP and hopes to continue her research after graduation on lower limb ischemia in patients receiving VA ECMO. In her free time, Niki enjoys discovering local cuisine, learning a new skill/ talent, and spending time with her family.

and aortic disease in this population. Because the coagulopathy in these patients can run in either direction, depending on the balance of lupus anticoagulant activity, clotting factor deficiency, and platelet dysfunction, most published protocols for SLE cardiac surgery call for preoperative anti-phospholipid and lupus anticoagulant testing so that the anticoagulation and blood product strategy can be tailored to the patient's individual risk before the patient ever reaches the operating room (Sharma, 2011).

Rheumatoid arthritis (RA) introduces a distinct set of perioperative considerations. Beyond the well-described risk of cervical spine instability, which may complicate airway management and patient positioning, patients with RA have a several-fold increased risk of ischemic heart disease, as well as valvular and conduction abnormalities, independent of traditional cardiovascular risk factors. In addition, chronic immunosuppressive therapy may increase the risk of postoperative infection (Krause & Matteson, 2014). Autonomic nervous system dysfunction, regardless of its underlying cause, blunts the normal compensatory reflexes that maintain blood pressure and heart rate during the hemodynamic fluctuations associated with anesthetic induction, initiation and weaning from cardiopulmonary bypass (CPB), and rewarming. Patients with dysautonomia may require more careful titration of vasopressor and inotropic support during surgery because their baroreflex responses to changes in preload and afterload can be unpredictable (Mustafa, 2012).

This case report is presented to illustrate how these three comorbidities may interact in a patient undergoing aortic root replacement and to discuss the perfusion implications of managing CPB in the absence of a preoperative antiphospholipid antibody panel.

Case Description

An adult female presents with a documented history of SLE, RA, and autonomic nervous system disorder, hypertension, type-2 diabetes mellitus, morbid obesity, fibromyalgia, migraines, pseudo tumor cerebri, bipolar disorder, autism spectrum disorder, recurrent urinary tract infections, and a prior gastric bypass among other comorbidities. She carried an extensive medication and allergy list including allergies to several antibiotic classes, opioids and adhesives. She was maintained on a medication regimen that included buprenorphine, cyclobenzaprine, topical estradiol, memantine, onabotulinum toxin A, and tirzepatide. She presented with an aortic root and ascending aortic aneurysm and was scheduled for an ascending aortic replacement. Preoperative coagulation studies showed a prolonged PT (17.2 -21.4 seconds), an INR of 1.35 to 1.8, a PTT of 31 to 34 seconds, and a low normal fibrinogen 153-210 mg/dL.

In the absence of preoperative antiphospholipid antibody testing, central cannulation was performed, with the arterial cannula placed in the ascending aorta proximal to the arch vessels and venous drainage established through a single dual-stage right atrial cannula (36/36 Fr; Edwards Lifesciences). Arterial return was through a soft flow MC3 7mm aortic cannula. The CPB circuit consisted of a Medtronic oxygenator and tubing set and was operated on a Spectrum Medical heart-lung machine using a centrifugal pump in nonpulsatile mode. Pump flows ranged from 3.84 to 4.83 L/min. The circuit was primed with 2000 ml of Isolyte, 10,000 units of heparin, 10 ml (1g) of tranexamic acid, 12.5 gms of mannitol and 100 ml of 25% albumin. Retrograde autologous priming reduced the residual prime to 1600 ml of prior to initiating bypass.

Blood pressure at the time of aortic cannulation was 115/90 mmHg. The total cardiopulmonary bypass (CPB) time was 135 minutes, with an aortic cross-clamp time of 121 minutes. Circulatory arrest was not required for the repair. Del Nido cardioplegia was administered with an initial arresting dose of 1,200 mL, followed by 500 mL via the left coronary ostium. Forty-five minutes later, an additional 250 mL was administered via the left coronary ostium, followed by 50 mL via the right coronary ostium.

Core temperature ranged from 37.2°C to a nadir of 34.2°C, and pH was maintained between 7.38 and 7.42 throughout CPB. Mean arterial pressure ranged from 50 to 81 mmHg, indexed oxygen delivery ranged from 215 to 273 mL/min/m^2, lactate levels ranged from 0.4 to 0.7 mmol/L, and glucose levels ranged from 119 to 186 mg/dL. Anticoagulation was monitored by ACT, which ranged from 1005 seconds at its peak to 603 seconds prior to protamine reversal.

The intraoperative course was uneventful: there were no episodes of significant bleeding, nor difficulty weaning from bypass, and no arrhythmias requiring intervention. Postoperative white blood cell counts trended from 6.07 to 9.46. By postoperative day 6, the patient was ambulating 200 feet with supervision, and she was discharged to an extended care facility on postoperative day nine. The indication for discharge to an extended care facility rather than home was not documented in the record reviewed for this report.

Discussion

This patient's case illustrates the layered risk that autoimmune and autonomic comorbidity adds to what is, on its face, a routine aortic replacement. Three features of her history are worth discussing individually: her SLE, her RA, and her autonomic nervous system disorder.

SLE and the untested antiphospholipid status

SLE-associated aortitis is an established, although uncommon, cause of aortic root and ascending aortic aneurysm formation. Similar cases involving aortic root replacement for lupus-related aneurysmal disease have been previously described (Brinster et al., 2009). The larger concern for the perfusion team, however, is not the aortitis itself but the coagulation profile that frequently accompanies it. Antiphospholipid antibodies are present in roughly 40% of SLE patients, and their presence has been directly correlated with valvular, coronary, and aortic disease. In a Japanese cohort of 26 SLE patients undergoing cardiovascular surgery, including five aortic cases, investigators applied a formal anti-phospholipid antibody syndrome (APS) severity classification preoperatively and adjusted the anticoagulation and blood product strategy accordingly, an approach that produced zero in-hospital deaths and no major bleeding or thromboembolic complications. A separate review of antiphospholipid syndrome in CPB describes the central paradox of this population: lupus anticoagulant can falsely prolong the ACT independent of heparin effect, while the same patients remain at elevated risk for both perioperative thrombosis and, if a clotting factor deficiency coexists, hemorrhage (Sharma, 2011; Yamamoto et al., 2023). In this case, antiphospholipid antibodies were not checked before surgery, so the perfusion and surgical teams proceeded without knowing whether the patient's ACT response to heparin could be trusted at face value, or whether she carried an elevated thrombotic or hemorrhagic risk profile that would

have called for a modified anticoagulation strategy, additional blood product availability, or postoperative anticoagulation planning. The patient's preoperative coagulation studies were mildly abnormal, with a PT of 17.2–21.4 seconds, an INR as high as 1.80, and a fibrinogen level as low as 153 mg/dL. In a patient with SLE, these findings may be related to the underlying disease or to another cause. Because antiphospholipid antibody and lupus anticoagulant testing was not performed, the cause of the coagulation abnormalities could not be determined preoperatively.

Despite this, the patient had an expected response to heparin during CPB. The ACT reached a peak of 1,005 seconds and remained at 603 seconds before protamine administration. The procedure was completed without significant bleeding or thrombotic complications. Although the patient tolerated CPB without incident, the absence of preoperative antiphospholipid and lupus anticoagulant testing made it difficult to anticipate her coagulation response before surgery.

Given the known association between antiphospholipid antibodies and thrombotic complications in patients with SLE, preoperative screening for antiphospholipid antibodies and lupus anticoagulant may be worth considering in SLE patients undergoing cardiac surgery. Additionally, tranexamic acid (TXA) was administered according to the institutional CPB protocol. However, because antiphospholipid antibody testing was not performed and the patient already had mildly abnormal coagulation studies, her thrombotic risk was not fully known before surgery. Although TXA is commonly used in cardiac surgery to reduce bleeding, its use in a patient with an unrecognized prothrombotic condition deserves consideration. The patient's DO_2i also fell below commonly accepted target ranges during portions of CPB, suggesting periods of reduced systemic oxygen delivery rather than evidence of a coagulopathic event.

Rheumatoid Arthritis

Patients with RA carry a higher risk of ischemic heart disease, valvular disease, and conduction abnormalities, even in the absence of traditional cardiovascular risk factors. These risks are important when an RA patient presents for cardiac surgery. From a perfusion perspective, the main concerns are not necessarily related to the CPB circuit itself, but to the patient's overall perioperative risk. Chronic immunosuppressive or corticosteroid therapy may increase the risk of infection, while cervical spine instability can complicate airway management and positioning. Although these issues are managed primarily by anesthesia and surgery, they remain part of the broader risk profile during CPB.

This patient did not experience any obvious RA-related complications during the procedure. However, her overall comorbidity burden, including coexisting SLE, may have contributed to a slower postoperative recovery and the need for discharge to an extended care facility rather than home. This is consistent with reports of more complicated recovery in patients with autoimmune and connective tissue disease undergoing cardiac surgery (Krause & Matteson, 2014).

Autonomic Nervous System Disorder

Dysautonomia can interfere with the normal baroreflex and sympathetic responses that help stabilize blood pressure during anesthetic induction, initiation of CPB, volume shifts, and rewarming. Because of this, patients with autonomic dysfunction may respond less predictably to these physiologic changes and may require closer titration of vasopressor and inotropic support.

In this patient, MAP during CPB ranged from 50 to 81 mmHg, and no significant episodes of hemodynamic instability were reported. Indexed oxygen delivery ranged from 215 to 273 $mL/min/m^2$, while lactate remained low at 0.4–0.7 mmol/L throughout the case. Although some DO_2i values were below commonly cited targets,

the low lactate levels and otherwise stable course suggest that perfusion was adequate. This case shows that patients with dysautonomia can tolerate CPB without major hemodynamic complications, but the potential for wider blood pressure swings should still be anticipated, with vasoactive support readily available if needed (Mustafa, 2012). Taken together, this patient's SLE, RA, and autonomic nervous system disorder did not result in a complicated bypass run, but each condition carries potential risks that should be considered when planning CPB. The clearest takeaway from this case is the value of preoperative antiphospholipid antibody and lupus anticoagulant testing in patients with SLE undergoing cardiac surgery. These results may influence the anticoagulation strategy during bypass and are particularly important when interpreting the ACT, which may not behave as expected in patients with lupus anticoagulant or antiphospholipid antibodies.

Conclusion

Aortic root in ascending aortic aneurysms in patients with SLE, RA, and autonomic nervous system dysfunction require the perfusionist to think beyond the aneurysm itself. This patient is sending aortic replacement was completed on CPB without circulatory arrest, bleeding, weaning difficulty, or arrhythmia, and her oxygen delivery and lactate remained stable throughout a bypass run of just over 2 hours. Even so, they absence of preoperative antiphospholipid antibody testing left the perfusion and surgical teams without information that is increasingly considered standard workup for SLE patients undergoing cardiac surgery, and that would have clarified both her anticoagulation risk and the reliability of her ACT on bypass. This case supports incorporating antiphospholipid and lupus anticoagulant screening into the preoperative workup of SLE patients presenting for aortic surgery and reinforces the importance of getting hemodynamic lability in patients with coexisting autonomic dysfunction.

References

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48th Annual Seminar of
The American Academy of Cardiovascular Perfusion
Hilton Salt Lake City Center
255 South West Temple, Salt Lake City, UT 84101
February 3-6th, 2027

Tentative Program Outline

Wednesday, February 3rd, 2027

1:00 pm – 5:00 pm REGISTRATION

2:30 pm – 5:00 pm **Manufacturers' Breakout Rooms**

5:00 pm – 5:30 pm Opening Business Meeting
Fellow, Member, Senior, and Honorary Members

5:30 pm – 7:00 pm **Pro/Con Debates**
Hypobaric (Physiologic) Perfusion vs. Traditional Oxygenation
Presentation A — Hypobaric Approach
Presentation B — Traditional Oxygenation: Defending the Standard
Panel Q&A

ECMO / VAD / NRP — CCP-Led vs. Non-Perfusionist Operators
Presentation A — The CCP-Led Model: Safety, Standards & Outcomes
Presentation B — Expanded Operator Scope: Practicality & Risk
Panel Q&A

Thursday, February 4th, 2027

7:00 am – 10:00 am REGISTRATION
7:00 am – 7:45 am Historical Video Presentation and Breakfast

7:45 am – 9:30 am **Special Scientific Panel Session I — Emerging Technologies & Novel Interventions**
Opening Remarks & Session Introduction
Physiologic (Hypobaric) Perfusion & Hybrid Venous Reservoir
- *Matthew Beck, CCP- Massachusetts General Hospital*

Hepzato Procedure - P*ercutaneous Hepatic Perfusion*
- *Dr. Samuel Wilhite- Assistant Professor of Interventional Radiology, University of Utah Health*

Intravascular / Catheter-Based Gas Exchange
- *Dr. Tobias Straub, Assistant Professor of Pediatrics, Duke University School of Medicine*

Heater-Cooler Technology: Current Landscape and Future Directions
Panel Q&A

9:30 am – 11:30 am **Fireside Chats**

AI & Perfusion — OR Black Box & Decision Support
Current tools; what's real vs. hype; safety implications; AI-assisted real-time decision making

CPB and ECMO — Best Monitoring Techniques & Circuit Designs
Anticoagulation monitoring, microvascular assessment, circuit modifications; nitric oxide circuit integration

Enhanced Recovery After Cardiac Surgery (ERACS)
Goals, protocols, perfusionist role in early extubation pathways

PERFUSION Journal Club
Selected articles from PERFUSION journal to be discussed as a group

Students Only FSC

Webcast FSCs
Complex and Hybrid Pediatric Cases
Open case-sharing format; complex congenital, ECMO, hybrid; moderator-led

Transplant Today – Hearts, Lungs, Livers, & Kidneys
DCD evolution; perfusionist role; NRP landscape; Transmedics OCS; Xeno heart update

11:30 am – 12:30 pm Lunch and Historical Presentation

12:30 pm – 2:30 pm **Special Scientific Panel Session II — MCS, ECMO & Anticoagulation**
Session Introduction
Physiology of ECMO and CPB -Establishing a Myocardial Steady State
- *Dr. Marc Dickstein, Professor of Anesthesiology at Columbia University Medical Center/NYP*

PROTECT-TAVR, ECMO LAVA Technique for High Risk TAVR
Updates on Heart Failure & Mechanical Circulatory Support
- *Dr. Craig Selzman, Professor of Surgery and Chief of the Division of Cardiothoracic Surgery, University of Utah*

Impella: Prophylaxis, Escalation & De-escalation Strategies
Monitoring Reversal and Managing Heparin Rebound After Losing the Hepcon: Business as Usual?
- Michael Vespe, CCP, Northwell Health

Panel Q&A

2:30 pm – 3:00 pm Historical Presentation and Break

3:00 pm – 5:00 pm

Concurrent Dual-Track Session
Attendees choose Room A (Main Ballroom) or Room B (Canyon Room)

ROOM A - Main Ballroom
Congenital & Pediatric Perfusion

Congenital & Pediatric Session - Welcome
Type B Lactic Acidosis in Non-Complex Congenital Cases
- Rich Ginther, CCP, Children's Medical Center of Dallas
Bloodless Surgery & Modified Ultrafiltration in Small Patients
- Kevin Charrette, CCP, Seattle Children's Hospital
Reimagining the Pediatric Perfusion Curriculum
- Ed Harman, CCP, University of Utah
From the Ground Up: Rebuilding a Congenital Heart Program
- Brent Fare, CCP, Mary Bridge Children's Hospital
Incorporation of Sweep Nitric Oxide into ECMO: A Retrospective Analysis
- JP Reyes CCP, Lucille Packard Children's Hospital Stanford
Panel Q&A

ROOM B - Canyon Room
Administrative & Leadership

Administrative & Leadership Session — Welcome
Teaming in Cardiac Surgery — Year 1 Findings
Psychological Safety in Multidisciplinary Teams
Reality-Based Leadership: Ditch the Drama
New Hire Onboarding — Corporate Model vs. Preceptor-Led Immersion
Perfusionist Wellness & Avoiding Burnout
Panel Q&A

5:30 pm – 8:30 pm

Sponsor's Hands-On Workshop & Reception

Friday, February 5th, 2027

7:00 am – 10:00 am

REGISTRATION

7:00 am – 7:45 am

Historical Video Presentation and Breakfast with Sponsors/Exhibitors

7:45 am – 9:30 am

Special Scientific Panel Session III — *AI in Perfusion & Data Registries*
Session Introduction
Neither Autopilot nor Cheat Code: Leveraging AI for Didactic and Clinical Gains in Perfusion
- Jacob Weston CCP, University of Utah School of Perfusion, AI, Education & the Expert Development Pipeline
AI in Perfusion — Automated Data Acquisition to Improve Operator Performance
Patient Safety Organization for Database and Benchmarking
Unblinded or Unafraid: Lessons from Collaborative Learning in Congenital Perfusion
- Jim Reagor CCP, Cincinnati Children's Hospital, ECMO Data Registries & National Database Development
Panel Q&A

9:30 am – 11:30 am **Fireside Chats**

Improving Clinician Performance & Compliance
Data feedback loops; protocol adherence; performance culture; automated surveillance systems

Managing Unique HR Conversations

PERFUSION Journal Club (PEDIATRIC FOCUS)
Selected articles from PERFUSION journal to be discussed as a group

Transplant Today — Hearts, Lungs, Livers & Kidneys
DCD evolution; perfusionist role; NRP landscape; Transmedics OCS; Xeno heart update

Hands-on Heart Lab (attendance is limited)
Dr Smego, University of Utah

Webcast FSCs
Past, Present & Future of Perfusion Licensure
State licensure landscape; ABCP role; advocacy pathways

Vasoplegia Rescue Agents
Incidence, escalation practices, agent(s), efficacy

11:30 am – 1:00 pm Historical Video Presentation and Lunch

1:00 pm – 2:55 pm **Special Scientific Panel Session IV — Transplant, Procurement & Organ Preservation**
Session Introduction
NRP Beyond the Circuit: Building a Safe, Reproducible DCD Perfusion Program
- Tom Ferry, BS, CCP, Central Coast Perfusion
XVIVO Technologies for Organ Procurement
- Christine Chan, MS, CCP, New York Presbyterian Hospital
REUP: Techniques, Outcomes, and Lessons Learned in DCD Heart Recovery
- Joey Lepore, CCP, Vanderbilt University Medical Center
Current Trends in Heart and Lung Allograft Preservation and Transplantation
- Dr. Matthew Goodwin- Assistant Professor of Surgery, Division of Cardiothoracic Surgery, University of Utah
Organ Cryopreservation - the Science of Deep Cooling
Organ Preservation — Sherpa Packs & Temperature-Controlled Coolers
Panel Q&A

2:55 pm – 3:15 pm Historical Video Presentation and Break

3:15 pm – 5:00 pm **Memorial Session**
Introduction
Charles C. Reed Memorial Lecture
Thomas G. Wharton Memorial Lecture - Robert Grimmett, President, AACP

6:30 pm **Induction Dinner**
All Attendees and Guests (pre-registration required)

Saturday, February 6th, 2027

7:00 am – 10:00 am	REGISTRATION
7:00 am – 7:45 am	Historical Video Presentation and Breakfast
7:45 am – 10:00 am	**Scientific Paper Session**
10:00 am –12:00 pm	**Fireside Chats**
	Complex & Hybrid Pediatric Procedures Open case-sharing format; complex congenital, ECMO, hybrid; moderator-led
	Mission Perfusion Trips & Global Health Low-resource environments; volunteer experiences; crossover techniques
	Past, Present & Future of Perfusion Licensure State licensure landscape; ABCP role; advocacy pathways
	Vasoplegia Rescue Agents Incidence, escalation practices, agent(s), efficacy
	Webcast FSC **Improving Clinical Performance and Compliance** Data feedback loops; protocol adherence; performance culture; automated surveillance systems
12:00 pm	Closing Business Meeting *Fellow, Senior, and Honorary Members Only*

Live Webcast of the AACP Conference

The AACP will be offering a Live Webcast of the 2027 Annual Seminar in Salt Lake City, Utah.

Virtual attendees will be able to stream all of the General Sessions, as well as have two virtual Fireside Chats each day, exclusively for virtual attendees, ensuring qualification for Category I CEUs.

Virtual attendees will have the opportunity to again ask questions of the moderators.

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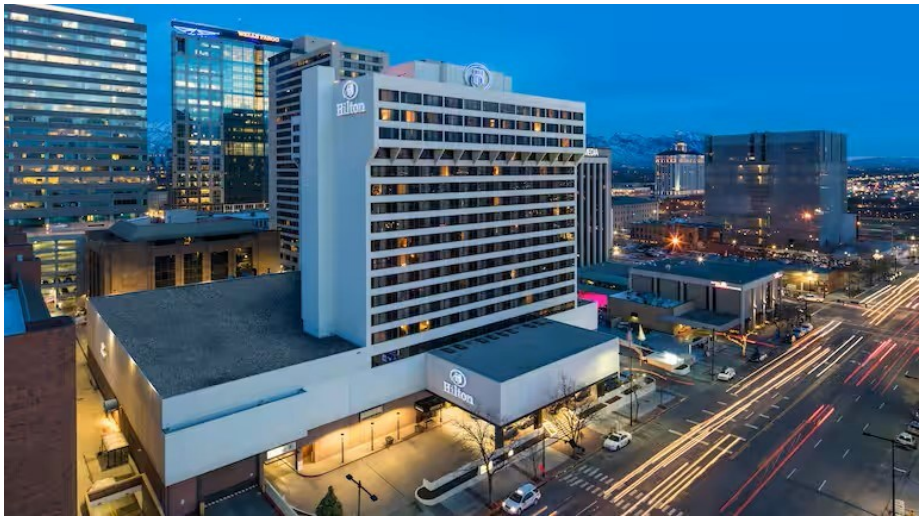
Important Academy Dates

The ACADEMY ANNUAL MEETING DEADLINES

ABSTRACT DEADLINE	**October 15, 2026**
MEMBERSHIP DEADLINE	**December 2, 2026**
PRE-REGISTRATION	**January 9, 2027**
HOTEL REGISTRATION	**January 9, 2027**
2026 ANNUAL MEETING	**February 3-6, 2027**

2027 Annual Meeting

Salt Lake City, Utah
February 3-6, 2027



Our Host Hotel

Hilton Salt Lake City Center
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Reservations: 1-800-HILTONS
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Remember to mention that you will be attending the Annual Conference of The American Academy of Cardiovascular Perfusion (AACP).

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