



# The Academy NEWSLETTER

THE AMERICAN ACADEMY  
OF  
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## A Joint Opinion on Perfusion Professionalism. *Two Organizations: One Purpose*

The topic of professionalism tends to arise from time to time within the Perfusion community. This discussion often centers on an impression of disenfranchised practitioners of perfusion and behaviors unbecoming of a highly skilled clinician. Often, the lack of professional society participation and attendance at continuing education events are cited. *[For those who are interested in this aspect please read the article by Susan Ellis referenced below (1)]* While the authors do encourage participation in professional societies and behaviors that exude professionalism, we do understand that this facet of the topic can be rather stale and uninteresting to many. We would like to address the topic from a different vantage point; first a very brief dive into perfusion history to give the topic some historical context and then approach it from an academic perspective.

Charles Reed was instrumental in both the American Academy of Cardiovascular Perfusion (AACP) and the American Society of Extracorporeal Technology (AmSECT) so we feel it is appropriate to begin this joint article with a mention of him. He served as the President of AmSECT from 1973 to 1975, as the President of the American Board of Cardiovascular Perfusion in 1975 and helped to found the AACP in 1979 serving as its President in 1984. In 1973 Charles Reed wrote a brief message to the AmSECT membership which outlined his hope for achievements during his Presidency of AmSECT (2). Within this article Mr. Reed paraphrases a famous quote from President John F. Kennedy: "Ask not what AmSECT can do for me, but rather what can I do for AmSECT". It is apparent that Mr. Reed is outlining the very beginnings of professionalism for perfusionists and perfusion societies in this communication to the AmSECT membership of that era.

Professionalism is demonstrated through a foundation of clinical competence, communication skills, and ethical and legal understanding, upon which is built the aspiration to and wise application of the principles of professionalism: excellence, humanism, and altruism (3). Excellence can be defined as the quality of being outstanding or very good. Humanism can be defined as a progressive philosophy of life that, without theism and other supernatural beliefs, affirms our ability and responsibility to lead ethical lives of personal fulfillment that aspire to the greater good of humanity. And altruism has been described as showing a desire to help other people and exhibiting a lack of selfishness. While it is not feasible to exhibit all of these traits all of the time, it is the pursuit of these ideals that is warranted and expected.

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True professionals are often easy to spot in the workplace. They are the people recognized for their specialized knowledge, and have a deep personal commitment to improve their skills (4). They devote themselves to keeping their knowledge base current to help deliver the highest level of customer service. They don't compromise their values, even in the face of adversity. They exhibit honesty and integrity, respect and accountability (4). Simply, they are a genuine credit to their organization. While such behaviors permeate through all levels of business, few arenas are as dependent on professionalism as healthcare.

The AACP and AmSECT have supported activities dedicated to meet the professional needs of the perfusion community. Both organizations share a similar mission to provide support for continuing professional development. This is achieved through the publication of scientific journals and newsletters, continued support of professional codes of conduct, and the adoption of clinical practice standards and guidelines. Subscribing to a professional journal should be a basic requirement for every practicing Perfusionist. For example, can you imagine hiring an accountant not keep abreast of the new tax laws? Perhaps you would sooner consider boarding a commercial airplane with a pilot not familiar with the new safety standards for take-off and landings. How about getting a medical opinion from a physician that is not aware of a new and more effective medical therapy to treat your illness? The majority of us wouldn't knowingly receive services from such essential yet uninformed personnel. Why would we expect anything different from the Perfusion industry? Scientific journals and newsletters keep us informed of all of the latest techniques, technologies and innovations designed to improve the delivery of care to our patients.

Perhaps the most underestimated and overlooked purpose for membership is the ability to provide networks for professionals to meet and discuss their field of expertise. Like other healthcare arenas, Perfusionists find themselves in a dynamic and continuously evolving work environment. Since the acuity of the patients we serve continues to change, the techniques and devices

that we employ to optimize their care must change as well. Many of us share the same challenges, and the ability to lean on our colleagues and peers across the organization can help promote positive changes in our local communities.

Stephen Covey, author of the acclaimed book *Seven Habits of Highly Effective People*, once wrote "*The bottom line is, when people are crystal clear about the most important priorities of the organization and team they work with and prioritized their work around those top priorities, not only are they many times more productive, they discover they have the time they need to have a whole life*" (5). Professional societies are created for the attainment of common goals. However, the ability to achieve these goals is reliant upon the contributions from its constituents. The future of medicine calls for professional organizations to assume an increased role to foster a continuously learning healthcare system.

David Fitzgerald<sup>#</sup> and Scott Lawson<sup>\*</sup>

<sup>#</sup>President, American Society of Extracorporeal Technology

<sup>\*</sup>President, American Academy of Cardiovascular Perfusion

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## Dr. Douglas F. Larson to Retire

Standing on the parade grounds of Fort Sam Houston in 1969 with all of his gear ready on the to ship off to Viet Nam, Doug was told that he had a change in orders and was now going to be the Chief of Perfusion at Walter Reed General Hospital. What is perfusion, he asked?

Today in a University of Arizona classroom, the aroma of Starbucks' breakfast blends permeates the lecture hall of graduate students. Coffee is a necessity for a rainy 8 a.m. Friday class. Professor Larson is beyond the remedy of steaming java, but he manages to mingle among his early risers. His wrinkled checkered shirt is tucked into his loose-fitting jeans. The bottom of his silver and turquoise belt buckle shines under his shirt and dark circles swallow his blue eyes behind black wire rims. The six-foot-two-inch instructor takes one more swig of coffee before beginning his journey toward the podium. A bead of water hangs onto one of the many gray stubbles invading his jaw line.

A student asks how one of Dr. Larson's patients is doing. "Better than the rest of us," Larson answers. Amid the students' chuckles, insight about their professor's last 24 hours surfaces. "He hasn't been home since yesterday at 5 a.m.," explains first-year doctorate student. After a full day of teaching, lab research and two open-heart surgeries and flying to Denver to pick up lungs for transplantation, Dr. Doug Larson has yet to acknowledge yesterday was his birthday.

Doug, as he prefers to be called, has roles as a full professor of Surgery, certified perfusionist, and the director graduate program of clinical perfusion. Today, he literally takes life into his own hands, but his intrigue with the human body began years ago.



The middle-aged professor, born in Montana, earned a bachelor's degree in zoology and a master's degree in physiology at Montana State University. After four years in the military, Doug ventured southwest to secure his doctorate in pharmacology and toxicology from the University of Arizona. When a large pharmaceutical company offered Doug a job in Switzerland discovering drugs to help the body's immune system, he put his research with the Arizona Wildcats on hold.

"I remember I parked in France, had a window looking out at Germany and while working in Switzerland," Doug recalls with a smile. After several years in Switzerland facing multiple language barriers, Doug, his wife, and three young boys returned to Arizona. "They (UA) said if I wanted my job back, I had to start a perfusion program," Doug explains.

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In his 33rd year at the University of Arizona and 37th year in perfusion, Doug is stepping down soon as a perfusionist but will remain a scientist, researcher and tenured full professor at the University of Arizona.

His research has centered on how the immune system contributes to normal and pathological cardiovascular function. Monitoring blood levels, quantifying cardiac function, characterizing cardiac gene expression, and analyzing cell counts are not what keeps Doug's heart beating, though.

"Research, horses, the underserved, and painting are my passions," Doug reveals. When the man of medicine is not reading, operating, analyzing or teaching, he is



riding. Tecate, named after a joke when he worked in Mexico, is Doug's stress relief. He sees the mare three to four times a week and rides her at his sister's ranch in Sonoita. "I am a fast driver, but after riding her, I drive about 10 mph," Doug confesses as he leans back in his chair.

Galloping his beer-brand beauty is not Doug's only release from the hectic hallways of the operating room. "Since I could walk, I have been painting," he says. Doug's canvas oil paintings, mostly of Navajo-like landscapes, that exhibit his minimalist attitude to life. He adamantly shakes his head when asked if he would ever sell his work.

Second-year doctorate student admires her professor's commitment to prioritizing. "Doug has struck a good balance between his personal and work life. He doesn't bring too much baggage and that helps facilitate a great lab," she says.

A sense of balance and relaxation are areas Doug credits to his obsession with Native American culture. "I sometimes think I am a reincarnated Navajo – at least in attitude," he says while describing his yearly trips to the reservation. "I just feel at home there," Doug says. Although Sitting Bull had dinner with Doug's grandmother, he is Swedish. Doug keeps his personal beliefs to himself, but he does have one philosophy he brings to the lab. "A researcher cannot be a good researcher without being a good artist first," says the equestrian Michelangelo. A former student Tamara knows that theory first hand. She earned a degree in biochemistry and ballet and now works for Doug.

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"Our lab has grown because people are attracted to Doug. He is never condescending and always invites new ideas," explains one of his doctoral students. There are four doctorate students and five master's students under Doug's guidance. He oversees thesis and dissertation research and teaches classes up to six times per week. His office, tucked in the corner of the large lab room, is the size of a dorm room. Pictures of his wife and grown sons occupy the space right above his computer, and three rows of shelves compactly lined with primary colored binders form a right angle encompassing his desk. A Navajo artwork, a poem from a former student and an award for perfusion hang above two oversized cabinets compiled of Doug's published work.

Outside the scholastic world, the born and raised Western liberal has involved himself in a variety of activities. During the early 1990s, Doug built medical clinics and homes for the poor in Mexico's barrios. After his weekly trips to the border, Larson focused his efforts closer to home working with South Tucson gang members. Currently he is devoted to serving and supporting the poor and homeless in Tucson. This could be a full-time job for most.

Despite his 12-hour days and extracurricular activities, Doug says his 45-year marriage has not suffered. "She" works right down the hall in the virology department, Doug explains, referring to his wife, Shari.

Aside from Doug's expertise in research and transplant, students say, lies one of his best qualities. "He has the innate ability to make complicated material simplified and easy to understand," says doctoral pharmacology student. "He provides us the skills we need to succeed individually," reiterates master's student. A laboratory assistant who has known Doug for 10 years, describes him as "not the boring professor type." "Inspiring mentor" is the phrase forth-

year doctorate student uses to characterize his professor.

Most say Doug is an extraordinary man, but going above and beyond can be detrimental. "Doug tries to do too much at times and that makes him fragmented," a colleague explains. "He does take on a lot and that puts him under a lot of stress sometimes," affirms former student and fellow staff person, "but that is also what makes him such a great guy."

Doug has a lot to brag about, but compliments his colleagues instead. He has published at least 250 articles, books and chapters and trained over 75 students. He has had NIH research funding for over 15 years. He could retire and ride Tecate everyday, but mentoring students is most important. His professorial status expects a suit and tie, but jeans, flannel shirts and work boots are more comfortable. Doug could complain about teaching after being awake 27 hours, but instead, he reviews all 50 Power Point slides to an eager audience...never once mentioning he is a year older.

*This article was originally written by Jenn Karlman when she was a Senior in Journalism at the University of Arizona.*

**Remember to Pre-Register for the 2014 Meeting by January 3, 2014 to get the \$50 discount. After that date you will have to register on-site in Orlando.**

**Also remember to make your hotel room reservation while there are still rooms available in our block.**

# 2014 Annual Academy Meeting



**Orlando, Florida  
January 23 - 26, 2013**

## Thursday, January 23, 2014

9:00 AM – 1:00 PM	Council Meeting
10:00 AM – 3:00 PM	REGISTRATION
2:30 PM – 4:30 PM	Fireside Chats (Session #1) <i>Adult ECMO: management, staffing, transport, equipment</i> <i>Hemostasis management: anticoagulation, testing, blood conservation</i> <i>High-fidelity simulation</i> <i>Perfusion safety: preventing, reporting and dealing with disasters</i> <i>Student Only Forum</i>
4:30 PM – 5:30 PM	REGISTRATION
5:00 PM	Opening Business Meeting <i>Fellow, Member, Senior and Honorary Members</i>
6:00 PM – 8:30 PM	Sponsor's Hands-On Workshop & Reception

## Friday, January 24, 2014

7:00 AM	REGISTRATION
7:30 AM – 9:30 AM	Scientific Session
9:30 AM – 10:00 AM	Break
10:00 AM – 11:30 PM	Scientific Session
11:30 PM – 1:00 PM	Lunch
1:00 PM – 3:30 PM	Special Scientific Session (Panel)

### ***Quality Initiatives: Controlling the Cost of Cardiac Care on a Local, Regional and National Level***

*Co-Moderators: Robert Groom, MS, CCP and David Fitzgerald, CCP*  
*Experience of UPMC using the Toyota production system based methodology - Dr. Michael Culig*

*The Quality Movement in Cardiac Surgery: The Michigan Experience - Dr. Richard Prager*

*Perfusionist's Perspective - Kenny Shann, CCP*

3:30 PM – 5:30 PM

**Fireside Chats (Session #2)**

*Best practices: Patient management, Are we doing it right?*  
*Communicating with the generations*  
*High-fidelity simulation*  
*Mechanical assist devices*  
*Pediatric ECMO*

6:30 PM

**Induction Dinner**

*Fellow, Senior, Honorary Members & Guests*

**Saturday, January 25, 2014**

7:00 AM

**REGISTRATION**

7:30 AM – 9:30 AM

**Scientific Session**

9:30 AM – 10:00 AM

**Break**

10:00 AM – 11:30 AM

**Memorial Session**

*Charles C. Reed Memorial Lecture*

*Mark Kurusz, CCP (Retired)*

*Thomas G. Wharton Memorial Lecture*

*D. Scott Lawson, MS, CCP - President, AACP*

11:30 AM – 1:00 PM

**Lunch**

1:00 PM – 3:30 PM

**Special Scientific Session (Panel)*****Trends in Cardiac Care***

*Co-Moderators: Edward Darling, MS, CCP and Haven Young, RN, CCP*

*Update on Heart Failure - Michael Sobieski II, RN, CCP*

*Update on Ex-Vivo Perfusion - Cyril Serrick, MSc, CCP, CPC*

*Update on the Perfusionist's Role in the Cardiac Catheterization*

*Laboratory - William Harris, CCP*

*Update on Drug Shortages in Cardiac Surgery - Dr. Mark Twite*

3:30 PM – 5:30 PM

**Fireside Chats (Session #3)**

5:30PM

**Closing Business Meeting**

*Fellow, Senior and Honorary Members Only*

**Sunday, January 26, 2014**

7:30 AM – 9:30 AM

**Fireside Chats (Session #4)**

*Adult ECMO: management, staffing, transport, equipment*

*High-fidelity simulation*

*Multidisciplinary simulation: a focus on teamwork*

*Pediatrics*

*Women in perfusion*

10:30 AM – 12:30 PM

**Fireside Chats (Session #5)**

*Managing perfusion teams*

*Perfusion education: what makes a good instructor?*

*Perfusion safety: preventing, reporting and dealing with disasters*

*Rare patient populations: sickle cell, JW's, pregnancy, etc.*



# ON BYPASS

## An Update On Myocardial Protection: The Journey Continues

Blood concentrated microplegia is an established method of providing myocardial protection during cardiac surgery. The intention of this brief article is to review several scientific articles comparing 8:1 cardioplegia to whole blood microplegia and to discuss Low Cardiac Output Syndrome (LCOS) in patients having coronary artery bypass grafting (CABG).

A paper published in 2013 in the *Annals of Thoracic Surgery* entitled 'Microplegia During Coronary Artery Bypass Grafting Was Associated With Less Low Cardiac Output Syndrome: A Propensity-Matched Comparison' by Algarni et al (1) presents results and conclusions from a large center. The study retrospectively compares standard 8:1 cardioplegia with microplegia which is blood, additives and minimal crystalloid.

The study is of particular interest as it compares 2,630 consecutive patients undergoing isolated coronary artery bypass using microplegia (2004-2006) with 5,058 consecutive patients again with isolated coronary artery bypass using 8:1 cardioplegia (1998 to 2000). Using propensity scoring 1,980 matched pairs were found.

These published reports had demonstrated identical hospital mortality (1.2%) and most interestingly a significantly lower occurrence of low cardiac output syndrome (LCOS) for the microplegia group. The microplegia group occurrence of LCOS was 2.7% as compared to the 8:1 cardioplegia group at 5.0%, a  $p < 0.001$ . Perhaps more importantly was the reduction in LCOS in high risk patients.

This group had been originally identified in a 2011 paper published in the *Annals of Thoracic Surgery*, 'Predictors of Low Cardiac Output Syn-

drome After Isolated Coronary Artery Bypass Surgery: Trends over 20 Years' Algarni et al. (2) 25,176 consecutive isolated CABG patients were divided into four time periods (1990-1994,  $n=6,489$ ; 1995-1999,  $n=8,175$ ; 2000-2004,  $n=6,741$ ; 2005-2009,  $n=3,797$ ). The results showed the prevalence of post-operative LCOS decreased from 9.1% in the first era to 2.4% in the fourth era. The identified risk factors were Left ventricular ejection fraction less than 0.20, emergency surgery, cardiogenic shock, female gender and LVEF of 0.20-.039. All risk factors except LVEF less than 0.20 showed improvement over the 4 eras. Post operative LCOS increased significantly in this group. These published clinical reviews highlight the importance of whole blood concentrated microplegia and the associated overall improvement in myocardial protection.

In their 2013 paper the authors state "cardioplegia technique was an independent predictor of LCOS, where patients in the standard cardioplegia group had almost twofold greater odds of postoperative LCOS compared with patients in the microplegia group." Elderly patients (>75 years of age) in the microplegia group had a lower incidence of LCOS when compared to those in the 8:1 group (8.5% vs 15.1%  $p=0.02$ ). There was a lower requirement for postoperative IABP in the microplegia group (2.5% vs 4%  $p=0.02$ ). Other at risk subgroups reduction in LCOS included those undergoing urgent/emergent surgery, left main disease, preoperative MI and female patients. Female patients were the only subgroup that demonstrated a reduced mortality with microplegia.

There was a statistically significant decrease in post-operative ventilation

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time and length of stay. However, there was no clinical significance in these improvements.

The authors also suggest that a reduction in LCOS could be associated with reduced myocardial edema. Animal studies demonstrated extended ventricular dysfunction after cardioplegic arrest with crystalloid cardioplegia. (5) They identify a subgroup with significant preoperative ischemic injury combined with longer CPB. The results showed marked reduction in LCOS in patients identified as having had a preoperative MI when compared to the 8:1 cardioplegia group.

Accelerated ventricular recovery after microplegia could be associated with the buffering effects of a high hematocrit CPS during episodes of myocardial acidosis.(6)

Intra-operative and post-operative blood product usage has become an area of significant focus for many surgical teams. The STS 2011 Update Blood Conservation Clinical Practice Guidelines (3) states that "While more data is required, routine use of a microplegia technique may be considered to minimize the volume of crystalloid cardioplegia administration as part of a multi-modality blood conservation program.....Minimizing the crystalloid component of blood cardioplegia is intuitively advantageous with respect to minimizing hemodilutional anemia and possible subsequent RBC transfusions." This is a Class IIb recommendation. Patients expect that we will use all methods available to us to minimize transfusions.

Blood cardioplegia is associated with reducing post-operative adverse events. Guru et al. in a paper entitled "Is Blood Superior to Crystalloid Cardioplegia?: A Meta-Analysis of Randomized Clinical Trials" (4) concluded that there was a significant reduction in post-operative LCOS and CKMB release which is associated with myocardial tissue damage and diminished long term survival.

In reviewing myocardial protection strategies, there are few methods referenced in the literature regarding a different modality in the delivery of whole blood concentrated microplegia. The initial approach, with the incorporated use of a basic syringe delivery pump technology, did offer the initial impetus towards freedom from conventional blood ratio crystalloid cardioplegia technique thereby allowing complete removal of the crystalloid component of the standard blood ratio cardioplegia. This was described by Menasche et al in his paper published in 1993 in the Annals of Thoracic Surgery entitled A

Simplified Method for Delivery of Normothermic Blood Cardioplegia (7) .

Seeking further improvement, Quest Medical, Inc, introduced their seamless integration MPS technology-adaptable to all heart lung machines. When compared to the early syringe pump technology, several distinct clinical advantages were realized. The MPS console, with its incorporated microprocessors, allow for independent and precise delivery of specific myocardial additives and arrest agent while allowing for complete elimination of the crystalloid component of standard blood ratio cardioplegia. Inherent to the MPS technology is the air emboli protection, blood buffering ability with maintenance of normal osmotic pressure, precise drug composition and distribution, stepwise transition to microplegia, inherent ability to automatically adjust to vascular resistance and accurate temperature control capability-all incorporated in a design for flexible case management. Another distinct advantage inherent to the MPS console design is the ability to maintain a constant pressure flow relationship through its auto flow capability. Retrograde and root pressures can be transduced to the MPS to use the machine safety features.

Assembly of the disposable can be learned quickly and the user interface is intuitive and visually pleasing. It combines numerical read outs with visual cues as to how CPS is being delivered. Individualized surgeon, procedure or perfusionist protocols can be created and saved. The ability to pick the route of delivery is available. Cardioplegia can be delivered from all blood to all crystalloid with the ease.

The Perfusionist draws up his or her own arrest and additive solutions prior to each case. This eliminates the cost and the use of scarce pharmacy resources or commercially available products. Cardioplegia is always available removing potential supply issues when depending on third parties.

The Quest MPS is included in a number of improvements or to use the authors words 'enhancement(s) of perfusion techniques' in a paper published in JECT in 2005 by Stammers et al.(8) The study showed notable improvements in mortality rate, reoperation for bleeding, stroke and cardiac arrest.

Quest Medical continues to improve the interface of the MPS console by clinical interaction and thoughtful feedback from within the Perfusion and

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Surgical community. This professional interaction, through mutual cooperation and consultation, has served to foster the future improvement of MPS technology as an effective tool in the delivery of whole blood microplegia.

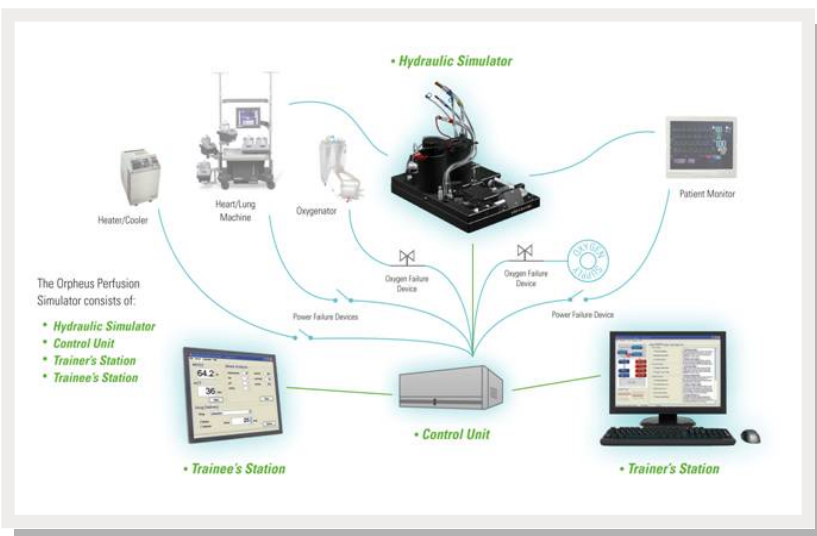
As a practicing Clinical Perfusionist I have considerable experience in delivering myocardial protection both with crystalloid cardioplegia and whole blood microplegia via the Quest MPS. It is my belief that the use of the Quest MPS has been directly associated with an improvement in cardiac patient outcomes. This personal belief is born out by the enclosed scientific observations. The MPS console is engineered to improve outcomes through a seamless technology. A major step toward Best Practices and blood conservation modalities.

In closing, I would encourage the reader to trial the MPS console and to draw their own conclusions. Our institutional experience, over these past years, demonstrates the continued refinements in our clinical application of this improved myocardial strategy. Thank you for your continued interest in improving our patient outcomes which is, after all, why we are Perfusionists.

## References

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## AACP to Offer Simulation at the Annual Conference



The Academy will be offering you the opportunity to experience high fidelity perfusion simulation at the 35<sup>th</sup> Annual Seminar in Orlando. There will be several sessions with specific situations. Edward Darling and Adam Fernandez will be coordinating the sessions.

# The Student

# Section

## The Perfusion Management of Chronic Volume Overload During Cardiopulmonary Bypass: Case Studies

The cardiovascular pathologies that cause chronic volume overload modalities, such as aortic valve insufficiency, mitral valve insufficiency, or congestive heart failures, are well understood on a surgical basis. Yet, an established set of guidelines for managing chronic volume overload patients by the perfusionist during cardiopulmonary bypass (CPB) still lacks a specific management protocol as a standard of practice.

The Frank-Starling Law of the Heart dictates that volume overload, caused by chronic cardiovascular pathophysiologies, initiates a compensatory response to increase heart chamber volume capacity. Cardiac lesions, such as mitral valve insufficiency, accentuate this volume retaining affect and comprise left ventricular function. When surgery is needed to correct these defects, accuracy of proper hemodynamic management by the perfusionist dictates the degree of postoperative morbidity and mortality. Studies have shown that depending on the degree/severity of mitral valve insufficiency, the average size patient may retain an additional 300-1,000mL of blood volume. If this extra blood volume is not taken into consideration by the perfusionist, then improper circuit sizing, oxygen delivery, pump flow, and medication introduction may be significant and will compromise proper patient care during CPB and adversely impact post operative recovery. As an example of this significance, case studies were performed at a cardiac center , assessing 20

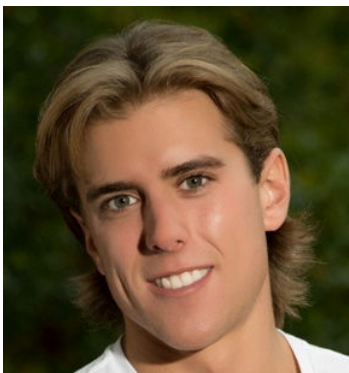
patients.

The patients analyzed were admitted for mitral valve insufficiency. Each patient's pertinent chart data was recorded along with the perfusion circuit setup, priming volume, and accurate medication dosage. In addition, CPB circuit intraoperative and postoperative volumes were recorded. Specific volumes recorded include IAD amount taken, reservoir volume after RAP was finished, RAP amount, urine output, any volume added during CPB, cell saver processed volume post CPB, final reservoir volume immediately after coming off bypass, and the final CPB balance were recorded. Oxygen demands and estimated blood volumes for each patient were calculated. Further analysis of this information confirms other multiple publications that significant number of these patients studied had excess blood volumes. To analyze the variables and factors for each patient, other contributing factors were added..

One of the more obvious factors would be the persisting mitral valve regurgitation. Intuitively, it is expected that patients with severe mitral regurgitation (ex. 3+MR) will hold a larger amount of additional volume than someone with mild MR (ex. 1+MR). Other pathologies also play a role in the amount of additional blood volume retained. Body types (i.e. endomorph, mesomorph or ectomorph), age, gender, and height all play an important role in chronic volume overload.

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Some critiques to this study may be evaluated through previous literature reviews. Chronic volume overload pathologies, notably mitral valve regurgitation, are understood as one of the most common cardiac defects that lead to post-operative deaths. Publications show that patients with significant MR have persistent pulmonary hypertension (PH). This secondary characteristic almost doubles the chances of mortality after cardiac surgery. After the mitral valve insufficiency is surgically corrected, PH remains and will need to be addressed during the post operative care period. Perfusion management, however, had not reached consensus treating these patients with PH. In addition, issues of fluid shifts ( edema), proper hematocrit levels and reduction of post-operative donor blood infusions need to reach consensus to established a standard of care for

chronic volume overload patients.

To show a significant difference in blood volumes for these types of patients so a more appropriate approach for management of chronic volume overload patients, an algorithm will be created. This algorithm will correlate to a table by which any chronic volume overload patient can be optimally categorized. This algorithm will aid the perfusionist in obtaining an accurate measurement of the patient's blood volume. This will result in application of techniques that will be appropriate for managing the chronically volume overloaded patient. Results generated will be both accurate and reproducible, providing the patient with the best care possible and a greater improvement post-operatively. It is the intention of the authors that the data be analyzed and an algorithm produced will be presented at a perfusion meeting and published in a perfusion journal.

#### **INSTRUCTIONS and INFORMATION**

o Complete each appropriate section of this form by printing or typing.

This form may be copied, but must include both pages.

o Members must pay their 2014 Annual Dues along with their registration fees by completing that portion of the form.

o You will receive acknowledgment of your pre-registration by January 15, 2014--bring it with you to the meeting.

o No pre-registration will be processed after January 3, 2014.

-- **After this date you must register at the meeting.**

o Your receipt and meeting credentials will be available for you at the Pre-Registration desk at the meeting.

o There will be **NO ADMISSION to any Fireside Chat without proper admission credentials.**

o If you are joining The Academy with your registration you must:

- 1) complete appropriate areas of the form;
  - 2) you **MUST INCLUDE** the membership application form;
  - 3) include the \$25 filing fee;
  - 4) include \$145 for the 2014 Annual Dues;
- (Your membership begins with the closing business meeting)

o ONLY VISA/MasterCard credit cards are accepted - with VISA/MasterCard you may FAX your registration to (717) 867-1485

o The AACCP Federal Tax ID Number: 63-0776991 (for hospital use only)

o Refund policy: Anyone that is pre-registered for this meeting and is unable to attend will receive a full refund minus \$50.00 for handling, mailing, and processing upon written request before January 12, 2014.

o **Make checks payable to AACCP (US dollars). Mail completed pre-registration form and check to:**

**AACCP  
515A East Main Street  
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**IF YOU HAVE QUESTIONS FILLING OUT THIS FORM, PLEASE CONTACT THE NATIONAL OFFICE (717) 867-1485.**

o If paying by VISA/MasterCard you may FAX this form to (717) 867-1485 or mail to above address.



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The 2014 Annual Meeting of  
The American Academy of Cardiovascular Perfusion



<b>MEMBER</b> Registration Fee 2014 Annual Dues Adult Guest to Workshop	<b>FEE</b> \$340.00 \$145.00 \$25.00	<b>Amount</b> _____ _____ _____	<b>FIRESIDE CHAT REGISTRATION</b> (make your first three choices each day) <b>Thursday Sessions</b> 1) _____ 2) _____ 3) _____ <b>Friday Sessions</b> 1) _____ 2) _____ 3) _____ <b>Saturday Sessions</b> 1) _____ 2) _____ 3) _____ <b>Sunday First Sessions</b> 1) _____ 2) _____ 3) _____ <b>Sunday Second Sessions</b> 1) _____ 2) _____ 3) _____
<b>NON-MEMBER</b> Registration Fee Adult Guest to Workshop	<b>FEE</b> \$400.00 \$25.00	<b>Amount</b> _____ _____	
<b>STUDENT PERFUSIONIST</b> Registration Fee Adult Guest to Workshop <i>*MUST include a letter from the school director with registration.</i>  <i>To take advantage of the Student rate of \$30.00, you must be a current Student Member of The Academy.</i>	<b>FEE</b> \$30.00* \$25.00	<b>Amount</b> _____ _____	
<b>FELLOW or SENIOR MEMBER</b> Registration Fee 2014 Annual Dues Guest to Induction Dinner Adult Guest to Workshop	<b>FEE</b> \$400.00 \$170.00 \$100.00 \$25.00	<b>Amount</b> _____ _____ _____ _____	

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If you have questions completing this form, please call the national office. Hotel Reservations must be made separately through the hotel directly.

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Signature \_\_\_\_\_

**\*\* There will be a \$25.00 service charge for any check returned for insufficient funds.**

## **Abstracts Submitted for Paper and Poster Presentation at the 2014 AACP Meeting**

### **ASSESSING THE SAFETY OF DEL NIDO CARDIOPLEGIA SOLUTION IN ADULT CONGENITAL CASES**

Greg Smigla, Andrew Lodge, Richard Walczak, Desiree Bonadonna, David Kaemmer, Courtney Schwimer, Robert Jaquiss,

### **EVIDENCE-BASED MEDICINE AND MYOCARDIAL PROTECTION—WHERE IS THE EVIDENCE?**

Devyn Yarborough , Zac Ferguson, Blake Jarvis, Joseph J. Sistino

### **MYOCARDIAL PROTECTION: COMPARISON OF CUSTODIOL WITH BLOOD CARDIOPLEGIA**

Jennifer Arriola, Daniella Boros, Douglas F. Larson, Sreekumar Subramanian

### **NANOPARTICAL OXYGEN DELIVERY TO THE ISCHEMIC HEART**

Trevor Swyers, Josh Strom, Douglas F. Larson

### **THE EFFECT OF ISOFLURANE ON VASCULAR STIFFNESS**

Jessica Ortiz, Lance Eberson, Daniel Redford, Douglas F. Larson.

### **HEATED INTRAPERITONEAL CHEMOTHERAPY FOR PERITONEAL SURFACE MALIGNANCIES USING THE EIGHT MEDICAL RECIRCULATOR 8.0**

Aaron G. Hill, Jason P. Wilson, Richard A. Hoefer

### **PERFUSION MANAGEMENT OF CHRONIC VOLUME OVERLOAD DURING CARDIOPULMONARY BYPASS**

Lucas Hecker and Richard Chan

### **EXTRACORPOREAL MEMBRANE OXYGENATION CANNULATION STRATEGIES AND TECHNIQUES FOR THE ADULT POPULATION, THE COLUMBIA EXPERIENCE**

Michalis Varsamis , James R. Beck, Linda B. Mongero

### **CENTRIFUGAL PUMP PERFORMANCE FOR APPLICATION IN LOW-FLOW EXTRACORPOREAL CO<sub>2</sub> REMOVAL**

A.P. Simons, Y.M. Ganushchak, E.G.H.J. Martens, J.G. Maessen, P.W. Weerwind

### **SUCCESSFUL USE OF EXTRACORPOREAL MEMBRANE OXYGENATION FOR PULMONARY EMBOLISM, PROLONGED CARDIAC ARREST, POST PARTUM. A CANNULATION DILEMMA.**

Fernandes P, Allen P, Valdis M, Guo L

### **IS IT SAFE TO LEAVE AN ECMO CIRCUIT PRIMED?**

Allison Weinberg, Benjamin Miko, James Beck, Matthew Bacchetta, Linda Mongero

### **SAFTEY COMPARISON OF THE HEARTMATE II AND HEARTWARE DEVICES**

Kayla Gardner, Seana Hall, R. Smith, Douglas F.Larson

### **ABO INCOMPATIBLE HEART TRANSPLANTS**

Molly Hageman, Nicole Michaud, Isaac Chinnappan, Thomas Klein, Bret Mettler

### **CEREBRAL OXIMETRY MONITORING: A TECHNIQUE WHO'S TIME HAS COME?**

Harry McCarthy II, Aaron G. Hill, and Jeffrey Green

### **A SYSTEMATIC REVIEW OF CEREBRAL OXYGENATION MONITORING DEVICE RESEARCH**

Matthew T. Douds, Emory J. Straub, Andrew Calton Kent, Carla Bistrick, Joseph J. Sistino



**AUTOREGULATION DISTURBANCES DO NOT LATERALIZE TO THE SIDE OF STROKE DURING CARDIOPULMONARY BYPASS**

Kathleen Kibler, Ken Brady, Brijen Joshi, Masahiro Ono, Charles Brown, Charles Hogue, R. Blaine Easley

**PERFUSIONIST TECHNIQUES OF REDUCING ACUTE KIDNEY INJURY FOLLOWING CARDIOPULMONARY BYPASS: AN EVIDENCE-BASED REVIEW**

Dennis M. Long, Eric Jenkins, Kevin Griffith

**FIBRINOGEN ADMINISTRATION IN CARDIAC SURGERY LEADING TO THROMBOSIS OF A PATIENT'S BRACHIAL ARTERY AND THE CARDIOPULMONARY BYPASS CIRCUIT: A CASE REPORT.**

Roger D.P. Stanzel, Mark Henderson, and Stacy B. O'Blenes

**ASCENDING AORTA TO CAROTID AND BILATERAL AXILLARY ARTERY BYPASS GRAFT, RIGHT CAROTID ENDARTERECTOMY, AND CABG: A UNIQUE CASE STUDY REQUIRING ADVANCED PERFUSION TECHNIQUES**

Philip Mann

**DEVELOPMENT OF OUR TAVI PROTOCOL FOR EMERGENCY INITIATION OF CARDIOPULMONARY BYPASS.**

Fernandes P, Cleland A, Bainbridge D, Chu MWA, Kiaii B

**CHANGES IN HIGHER EDUCATION AND THE IMPACT ON PERFUSION EDUCATION – THE EDUCATOR'S PERSPECTIVE**

Joseph J. Sistino, Carla Bistrick

**CHANGES IN HIGHER EDUCATION AND THE IMPACT ON PERFUSION EDUCATION – THE STUDENT'S PERSPECTIVE**

Courtney Thurman, Casey Deer, Kelly J. Patterson, Carla Bistrick, Joseph J. Sistino

**CARDIOPULMONARY BYPASS CONSIDERATIONS FOR THE KETOGENIC DIET WITHIN THE PEDIATRIC PATIENT POPULATION**

Melchior RW, Frey T, Ramsey E, Savoca M, Dreher M

**TECHNIQUES OF MONITORING PRESSURE IN THE CPB CIRCUIT: A 2013 SURVEY**

Laura Rigg, Bruce Searles, Edward Darling

**FIRST TRANSPORTATION ON A BERLIN HEART EXCOR LEFT VENTRICULAR ASSIST DEVICE AS A BRIDGE TO TRANSPLANTATION TO ARKANSAS CHILDREN'S HOSPITAL**

Eudice E. Fontenot, MD PhD; Dorothy Garbin, CCP; Charles Johnson, CCP;

**EVALUATING THE POTENTIAL RISKS OF BUBBLES STUDIES DURING ECHOCARDIOGRAPHY**

G. Caitlin Bassett, Jau W. Lin; Michael M. Tran, Joseph J. Sistino

**UP-REGULATED T-REGULATORY LYMPHOCYTES EFFECT ON INTIMAL HYPERPLASIA**

Amanda Best, Tolga Turker, Beenish Majeed, Douglas F. Larson

**IMPROVING OUTCOMES WITH GOAL-DIRECTED THERAPY**

Laurie Dijoy, John Scott Dean, Carla Bistrick, Joseph J. Sistino

**TREATMENT OF REWARMING ACCIDENTAL HYPOTHERMIC PATIENTS USING EXTRACORPOREAL CIRCULATION**

Andrea Garcia and Richard Chan

**THE MANAGEMENT OF CEREBRAL OXIMETRY DURING CARDIOPULMONARY BYPASS AS STANDARD OF CARE FOR CEREBRAL PROTECTION**

Allison Aquino and Richard Chan

## Our 2014 Host Hotel



### Buena Vista Palace Hotel & Spa Orlando, Florida January 23 - 26, 2014

**Single/Double Occupancy—\$165.00 per night**  
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Website: [terumo-cvs.com](http://terumo-cvs.com)

## Important Academy Dates

### The ACADEMY ANNUAL MEETING DEADLINES

**ABSTRACT DEADLINE**                      **October 30, 2013**

**MEMBERSHIP DEADLINE**                **November 23, 2013**

**PRE-REGISTRATION**                      **January 3, 2014**

**HOTEL REGISTRATION**                  **January 3, 2014**

**2014 ANNUAL MEETING**                **January 23 - 26, 2014**

### *Others Meetings*

#### **Cardiology 2014**

Disney's Yacht and Beach Club Resort

Orlando, Florida

February 19-23, 2014

Contact Name: Tami Rosenthal

Contact Phone: 267-425-6588

Contact Email: [rosenthalt@email.chop.edu](mailto:rosenthalt@email.chop.edu)

#### **10th International Conference**

**Pediatric Mechanical Circulatory Support Systems**

**and Pediatric Cardiopulmonary Perfusion**

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