



The
Academy
NEWSLETTER

THE AMERICAN ACADEMY
OF
CARDIOVASCULAR PERFUSION
515A EAST MAIN STREET
ANNVILLE, PA 17003
(717) 867-1485 PHONE OR FAX
OFFICEAACP@AOL.COM
HTTP://WWW.THEAACP.COM

FALL 2016

Editor

David Palanzo
Annnville, PA

Contributing Editors

Tom Frazier
Nashville, TN

Kelly Hedlund
Hays, KS

Student Section

Richard Chan
Oyster Bay, NY

Inside This Issue

2017 Annual Meeting	2
Student Section	4
Eric Jenkins Retires	7
In Memorium Richard DeWall, MD	8
Jim MacDonald Retires	9
Archives: 1993 Wharton Lecture	10
Sponsoring Partner	15
On Bypass	16
Our Host Hotel	19

Hero Or Hazard?

This past June, I had the privilege of attending the AATS Safety Meeting in Boston. The meeting was organized by Kenny Shann CCP, LP and his Chief of Cardiac Surgery Thor Sundt, MD. It was a beautiful summer weekend in Boston, and many of the people who told me that they were leaving after lunch on Saturday were still present at 5 PM. The meeting was that good!

Almost every lecture was outstanding, but one by Doug Wiegmann, PhD really resonated with me. Dr. Wiegmann co-authored the book *"A Human Error Approach to Aviation Accident Analysis"* with Scott Shappell PhD, who you might remember gave several talks at last year's AACP meeting. The title of Dr. Wiegmann's lecture was "Hero to Hazard." He talked about the military pilots during WW II, who in many instances flew unfit aircraft into combat. To survive they needed to be very skilled pilots, they needed to be fearless and they needed to be of above average intelligence. These heroic traits would be later coined "The Right Stuff" in both a book and a movie. Because of these legendary traits, these pilots were viewed by many in society as heroes. Fast forward to 2016 - the cause of any plane crash today is "pilot error" until proven otherwise. So, what changed? The answer is the technology. Modern aircraft are in no way comparable to the aircraft of 1940's. There are new layers of safety mechanisms that have shifted the responsibility for an accident to the pilot and not the plane. The heroes of past aviation history have now become the hazards of present times. So, how does this relate to perfusionists?

Not that long ago, the "Hero" perfusionist was the person who could come up with an innovative, on-the-fly solution to a critical clinical situation and get the job done. Recently, I observed an example of such innovation. At a program that I visited this past April, several heater-coolers were out of service. One of our perfusion colleagues had the creative idea to run a free standing centrifugal pump from a Home Depot bucket filled with ice water through the single pass cardioplegia heat exchanger. Innovative, I thought at the time, but maybe not after I attended the Safety Meeting.

Another speaker at the Safety Meeting talked about how the Risk Management Department at many hospitals categorizes incidents and accidents that are reported in the work place. Incident reports are collated into three categories:

- 1.) Human Error
- 2.) At Risk Behavior
- 3.) Reckless Behavior

Continued on Page 21

2017 Annual Academy Meeting

San Diego, California
January 19-22, 2017

Thursday, January 19, 2017

8:00 AM - 12:00 PM	Special Breakout Sessions
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>ECMO</i> <i>Heater-Coolers: How Do I Get Rid Of The Sea Monkeys</i> <i>Hero To Hazard, Closing The Gap</i> <i>Perfusion Accidents</i> <i>Students Only Forum</i>
4:30 PM – 5:30 PM	REGISTRATION
5:00 PM	Opening Business Meeting <i>Fellow, Member, Senior and Honorary Members</i>
5:30 PM – 8:00 PM	Sponsor's Hands-On Workshop & Reception <i>All Attendees and Guests</i>

Friday, January 20, 2017

7:00 AM	REGISTRATION
8:00 AM – 9:30 AM	Scientific Paper Session
9:30 AM – 10:00 AM	Break
10:00 AM – 11:30 PM	Special Scientific Session (Panel) <i>Perfusion Near Misses and Misadventures</i> Pediatric Misadventure; James Beavers, CCP Cannulation Misadventure; Kevin Lilly, CCP Adult Congenital Case; Daniel FitzGerald, CCP Case Report ; William Riley, CCP Case Report; James Beck, CCP
11:30 PM – 1:00 PM	Lunch
1:00 PM – 3:30 PM	Special Scientific Session (Panel) <i>Shakespearean Debate of Pediatric Perfusion</i> 1) "To MUF or Not To MUF, That is the Question" (Pro: Tami Rosenthal, Con: Kevin Charette) 2) "Beware, The Ides of Bloodless Neonatal CPB, Should It Be Done?" (Pro: Ashley Hodge, Con: Carmen Giacomuzzi) 3) "NIRS, NIRS! Wherefore Art Thou NIRS?" (Pro: Joseph Deptula, Con: Richard Melchior)
3:30 PM – 5:30 PM	Fireside Chats (Session #2) <i>Best Practices / Evidence-Based Perfusion / Goal-Directed Perfusion</i> <i>Chief Perfusionist Forum</i> <i>EMRs / Databases / Registries</i> <i>Pediatrics</i> <i>Transporting VADs and ECMOs</i>

6:30 PM

Induction Dinner

*All Attendees and Guests**(Dark Suit and Tie Required, Black Tie Optional)***Saturday, January 21, 2017**

7:00 AM

REGISTRATION

8:00 AM – 9:30 AM

Scientific Paper Session

9:30 AM – 10:00 AM

Break

10:00 AM – 11:30 AM

Memorial Session

*Charles C. Reed Memorial Lecture**Kevin Grace, CCP**Thomas G. Wharton Memorial Lecture**Kevin Lilly, CCP, President, AACP*

11:30 AM – 1:00 PM

Lunch

1:00 PM – 3:30 PM

Special Scientific Session (Panel)

Future Trends in Cardiac Surgery

Tsuyoshi Kaneko MD

Assistant Professor of Surgery, Harvard Medical School

Department of Adult Cardiac Surgery

Brigham & Women's Hospital, Boston, MA

Nelson Thaemert MD

Instructor of Anesthesia, Harvard Medical School

Department of Adult Cardiac Surgery

Brigham & Women's Hospital, Boston, MA

Speaker :TBA

3:30 PM – 5:30 PM

Fireside Chats (Session #3)

*ECMO**Emergencies and Accidents**HIPEC, HILP, ILI, the Chemoperfusion Alphabet**Transplants, Harvests, ExVIVO**Ventricular Assist Devices*

5:30PM

Closing Business Meeting

*Fellow, Senior and Honorary Members Only***Sunday, January 22, 2017**

8:00 AM – 10:00 AM

Scientific Paper Session

10:30 AM – 12:30 PM

Fireside Chats (Session #4)

*Mission Trips, Duct Tape And Cipro**Potpourri For \$1000 Alex*

The Student Section

Management of Chronic Thromboembolic Pulmonary Hypertension

Chronic thromboembolic pulmonary hypertension (CTEPH) is a form of pulmonary hypertension (PH) often caused by a pulmonary embolism (PE) that has failed to lyse in spite of anticoagulation therapy. CTEPH is clinically defined by mean pulmonary artery pressure $>25\text{mmHg}$ that persists for six months after pulmonary embolism (PE) is diagnosed.¹ The obstructive nature of the thrombus leads to the development of pulmonary hypertension (PH) and right ventricular (RV) dysfunction.² The World Health Organization (WHO) has labeled CTEPH as group 4 in the classification of PH, but it should be known that CTEPH is the only amendable form of PH. The gold standard for CTEPH is a surgical procedure called pulmonary thromboendarterectomy (PTE). PTE incorporates cardiopulmonary bypass (CPB) with the use of deep hypothermic circulatory arrest (DHCA) to allow for a bloodless field while the occlusive material is detached from the endothelial lining of the PA. For patients that are not candidates, due to comorbidities or those with persistent hypertension after PTE, medical management is an option, but will not completely correct PH.

While several risk factors have been identified, the true etiology of CTEPH remains unknown. CTEPH primarily affects the more proximal vessels, opposed to pulmonary arterial hypertension (PAH) which affects the smaller blood vessels ($<300\mu\text{m}$ in size).³ The majority of these patient have a pulmonary vascular resistance (PVR) $> 300 \text{ dynes/s/cm}^5$, typically reaching the range of $700\text{--}1100 \text{ dynes/s/cm}^5$. The largest risk factor for CTEPH is history of PE. The ma-

jority of CTEPH patients have been diagnosed with prior PE, but not all CTEPH patients have had a PE or the PE was silent and never diagnosed. Other risk factors include splenectomy, inflammation disease, hypercoagulability due to tissue factor dysfunction, infected pacemakers and ventricular atrial shunts, thyroid hormone replacement, and non-O blood groups.

There are several imaging modalities used to diagnose CTEPH. Electrocardiogram (ECG) with peaked P waves is characteristic of cor pulmonale; however, it is not relied upon to "rule in or rule out" PE. Transthoracic echocardiogram is used to identify RV dysfunction and exclude causation being a left ventricular (LV) disease process. A chest X-ray is used to detect the characteristic of cardiomegaly on the posterior view with enlarged RV and PA on lateral view. Another imaging modality used is computed tomography and is useful in clinically suspected acute and chronic PE. It has been found to identify intraluminal thrombi and PA and RV enlargement. Anyone with suspected PH will undergo a right heart catheterization (RHC). This is typically performed in the presence of PH to assess the intracardiac pressures and function. If results are abnormal, a V/Q scan is performed to elaborate the distribution of air and blood through the lungs. A normal V/Q scan eliminates the possibility of CTEPH; however, an abnormal finding will result in the patient undergoing a pulmonary angiography. It is the combination of these two tests which is known to be the "gold standard" for diagnosing CTEPH.

As stated before, CTEPH is the only amendable form of PH and this is

Joey Lepore, BS, RRT
Senior Perfusion Student

*Cardiovascular Perfusion
Technology Program*

Vanderbilt University

Nashville, Tennessee

done via the PTE surgery. This is a highly specialized procedure which should only be done by a team that has an understanding of the procedure and the outcomes. At most institutions, PTE is performed by cardiac surgeon and a team that consists of anesthesiology, perfusion, first assistants, nursing, and surgical scrubs. Surgical steps involved in performing this surgery are the following:

- Median sternotomy.
- The heparin loading dose is 300-400 units/kilogram.
- Cardiopulmonary bypass (CPB) achieved with ascending aortic arterial and bicaval venous cannulation.
- Left ventricular vent placed via the right superior pulmonary vein to keep heart decompressed.
- Cool to 18°C with the heart allowed to fibrillate until achieving asystole.
- Dissection and removal of thrombus material from right or left PA for approximately 20 minutes. During this time the arterial pump is stopped and the arterial line is clamped. Upon cessation of venous return, the venous line is clamped with a period of DHCA established.
- After 20 minutes of DHCA, a period of systemic circulation is performed to achieve reperfusion. Perfusionist is instructed to bring MAP to 30mmHg while the PA is being sutured. When closed, MAP is brought to 50mmHg until surgeon is ready to attempt endarterectomy of other PA.
- Another period of DHCA is initiated to allow dissection and removal of thrombus from the other PA.
- The PA is closed while CPB is resumed to a MAP of 30mmHg. Once surgeon instructs perfusionist to increase MAP to 50mmHg, the patient is rewarmed.
- At 34°C the heart is defibrillated to sinus rhythm if the heart had not spontaneously converted.
- At 35.5°C, volume is left in the heart by partially biting the venous line until ejection occurs. Simultaneously, the vent is on in an attempt to remove any potential air. Heart is emptied out again until desired bladder temperature of 36.5°C is reached.
- CPB is terminated, heparin is reversed with protamine.

Like any surgery, there are complications. Specifically, for this procedure, pulmonary artery steal and reperfusion pulmonary edema are common.^{4,5,6} Pulmonary artery steal refers to the postoperative redistribution of PA blood flow from well perfused segments to newly endarterectomized segments creating V/Q mismatching and hypoxemia. This occurs in approximately 70% of patients that undergo PTE.⁴ Reperfusion pulmonary edema is a type of high-permeability pulmonary edema that typically occurs in areas of the lung from which proximal thromboemboli were removed. This occurs in approximately 30% of patients that undergo PTE.^{5,6} Extracorporeal membrane oxygenation (ECMO) should be available to support a patient following the surgical procedure. The patient can suffer from hemodynamic instability requiring veno-arterial ECMO. In the case of reperfusion lung injury, the patient can be supported by veno-venous ECMO.

Medical management of CTEPH for those with persistent PH after PTE or non-surgical candidates consist of several drugs such as Riociguat, Bosentan, Mecitentan, Sildenafil, or Prostacyclin-based drugs.^{7,8,9} The goal of medical management is to improve quality of life and increase results of 6-minute walking distances as well as decrease pulmonary vascular resistance.

In-hospital mortality rates for PTE surgery at a single US referral center are 2.2%, and 4.7% across multiple European centers.^{10,11} Survival rates in the UK at 5 and 10 years are 92.5% and 88.3%, respectively.¹² Reports from the Netherlands demonstrates 1-, 3-, and 5-year survival rates of 93.1, 91.2, and 88.7%.¹² PTE performed at experienced centers usually result in immediate and sustained improvement in hemodynamics: PVR going from >800 dynes/s/cm⁵ to values below 400 dynes/s/cm⁵ postoperatively.¹³ Patients with preoperative PVR >1000-1200 dynes/s/cm⁵ have a higher mortality rate, but this should not be a contraindication for PTE.¹⁴ Patients with CTEPH are maintained on lifelong anticoagulation.¹⁵ Due to the low mortality rate of PTE, every effort should be made to have CTEPH patients evaluated for the procedure.

In conclusion from the literature review completed and practical experience, PTE is a procedure which can be effectively done with the utilization of CPB to achieve successful outcomes. This is a procedure that a perfusionist will be required to partici-

Continued on Page 6

Continued from Page 5

pate in and will need to be mindful of the management techniques utilized during and after PTE to successfully treat these patients.

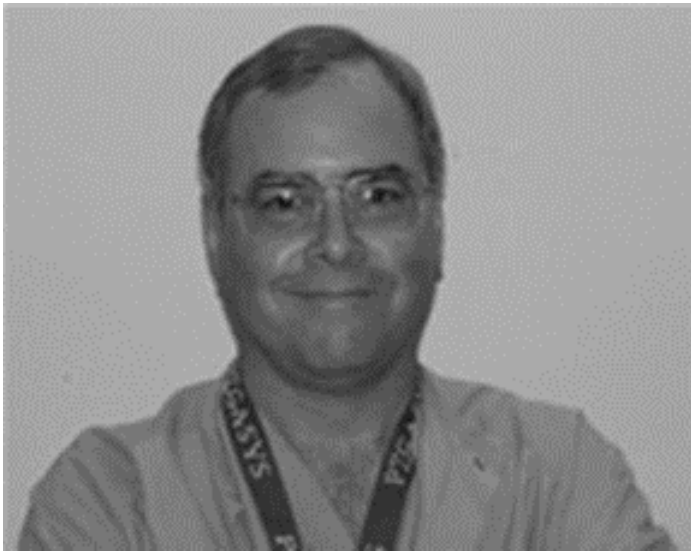
References

1. Piazza G, Goldhaber S. Chronic Thromboembolic Pulmonary Hypertension. *N Engl J Med* 2011; 364:351-60.
2. Witkin A, Channick R. Chronic Thromboembolic Pulmonary Hypertension: the End Result of Pulmonary Embolism. *Curr Cardiol Rep* (2015) 17: 63 DOI 10.1007/s11886-015-0621-9.
3. Lang IM, Pesavento R, Bonderman D, Yuan JX. Risk factors and basic mechanisms of chronic thromboembolic pulmonary hypertension: a current understanding. *Eur Respir J*. 2013;41:462-8.
4. Olman MA, Auger WR, Fedullo PF, Moser KM. Pulmonary vascular steal in chronic thromboembolic pulmonary hypertension. *Chest* 1990; 98:1430.
5. Levinson RM, Shure D, Moser KM. Reperfusion pulmonary edema after pulmonary artery thromboendarterectomy. *Am Rev Respir Dis* 1986; 134:1241.
6. Lee KC, Cho YL, Lee SY. Reperfusion pulmonary edema after pulmonary endarterectomy. *Acta Anaesthesiol Sin* 2001; 39:97.
7. Ghofrani H, D'Armini A, et al. Riociguat for the Treatment of Chronic Thromboembolic Pulmonary Hypertension. *N Engl J Med* 2013;369:319-29. DOI: 10.1056/NEJMoa1209657.
8. Jais X, D'Armini A, et al. Bosentan for Treatment of Inoperable Chronic Thromboembolic Pulmonary Hypertension: BENEFIT (Bosentan Effects in Noperable Forms of chronic Thromboembolic pulmonary hypertension), a Randomized, Placebo-Controlled Trial. *Journal of the American College of Cardiology*. Volume 52, Issue 25, 16-23 December 2008, Pages 2127-2134.
9. Ghofrani H, Schermuli R, et al. Sildenafil for Long-Term Treatment of Nonoperable Chronic Thromboembolic Pulmonary Hypertension. *American Journal of Respiratory and Critical Care Medicine*, Vol. 167, No. 8 (2003), pp. 1139-1141.
10. Madani MM, Auger WR, Pretorius V, Sakakibara N, Kerr KM, Kim NK, Fedullo PF, Jamieson SW (2012) Pulmonary endarterectomy: recent changes in a single institution's experience of more than 2700 patients. *Ann Thorac Surg* 94:97-103.
11. Mayer E, Jenkins D, Lindner J, D'Armini A, Kloeck J, Meyns B, Ilkjaer LB, Klepetko W, Delcroix M, Lang I, Pepke-Zaba J, Simonneau G, Darteville P (2011) Surgical management and outcome of patients with chronic thromboembolic pulmonary hypertension: results from an international prospective registry. *J Thorac Cardiovasc Surg* 141:702-710.
12. Saouti N, Morshuis WJ, Heijmen RH, Snijder RJ (2009) Longterm outcome after pulmonary endarterectomy for chronic thromboembolic pulmonary hypertension: a single institution experience. *Eur J Cardiothorac Surg* 35:947-952.
13. Rahnavardi M, Yan TD, Cao C, Vallety MP, Bannon PG, Wilson MK (2011) Pulmonary thromboendarterectomy for chronic thromboembolic pulmonary hypertension: a systematic review. *Ann Thorac Cardiovasc Surg* 17:435-445.
14. Poch D, Auger W. Chronic thromboembolic pulmonary hypertension: detection, medical and surgical treatment approach, and current outcomes. *Heart Fail Rev* DOI 10.1007/s10741-015-9518-3
15. Kearon C, Akl EA, Comerota AJ, et al. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest* 2012; 141:e419S.



**Annual Meeting
Abstract Deadline
October 15, 2016**

Eric Jenkins Is Retiring From Perfusion



Eric Jenkins, a long time AACP Fellow is retiring after 35 years in the Perfusion profession. Eric started his perfusion career in 1975 as perfusion assistant at the University of Alabama at Birmingham. He worked his way up to operating the bypass machine for Dr. John Kirkland. Eric subsequently graduated from the perfusion program at Ohio State University and spent the next 25 years as a Perfusionist at the University of Michigan and Mott Children's Hospitals. Eric has been a regular contributor to the AACP's annual meeting as both a presenter and Fireside Chat moderator. In his retirement, Eric plans to travel, write short stories and poetry, as well as, pursue his hobby of photography.

Perfusionist Going to Work

for Martin Spoor, MD and David Ashburn, MD

The commute is fourteen miles from a five acre farm with a pond and barn swallows, but this morning, when I pull into the parking deck, I hear a helicopter overhead - at this time of day - never a good sign. It's five forty-five, and by the pages

last night was truly bad - midnight transplants, aortic dissections and VAD transports. People will be tired - wanting to go home. Sorry, the schedule's full - not enough staff. No one's going home. There are leads to extract - valves to fix - major vessels to repair.

Did you think today would be different? Believe me. The heart has no mercy. Either it pumps or stops forever. That muscle has only four chambers at best. Sometimes, I want to forget them all, but life, truth, beauty, regret always prevail.

I lock the car and concentrate on surroundings. You can't be too careful this close to Detroit. At the crosswalk, the stoplight flashes yellow. I'm cautious by nature, so I pause and stare at this enormous edifice endowed in the fog by a promise of healing.

I walk past the flower beds, the quaint shrubs, bronze statues of a football coach and dead heroes. Some hurtled over Green Bay upside down - out of control - drowned in that terrible fresh water sea with kidneys, heart and lungs in a lunchbox full of ice and hope.

Most simply grow old and by habit cannot quit until they die, or someone tells them to leave. Others still gather organs or pass suture. A few measure and sew - talk to families. For myself, I replace the heart and lungs for as long as it takes. When I open the door,

all the windows close, and the air pressure becomes positive to drive out the bugs or any feeling that may cause a mistake. Upstairs in the OR, we change our skin. We wear hoods, masks and pajamas. Ask you your name - birthday - where to cut.

Eric Jenkins
April 25, 2014

In Memorium

Richard Alison DeWall, M.D.



Richard Alison DeWall, M.D. Age 89, born to Grace Gardner and Herman Harvey DeWall on December 16, 1926, Appleton, Minnesota died peacefully at his home August 15, 2016. Survived by his loving wife of 63 years, Diane (Prettyman) DeWall, daughters Beth Barclay DeWall (Chicago), Amy (Steve) Dadmun, Milwaukee, Melissa (Tim) Slager (Hudson, Ohio), and grandchildren Lauren Dadmun, Richard John Dadmun, Shelley Dadmun, Paige Dadmun, Luke Richard Slager, Sadie Slager, Marybeth Slager, and many nieces and nephews. Preceded in death by his parents and siblings, Robert DeWall, Jean Morris and Lorraine Ostdahl. Dr. DeWall grew up in Morris, Minnesota, where he became an Eagle Scout. He enlisted in the U.S. Navy where he served until October 1945. He then graduated from the University of Minnesota in 1949, where he also obtained his M.D. in 1953. He was a member of Sigma Chi Fraternity, and later became a Significant Sig. Dr. DeWall was also a member of the University's Marching Band. While serving his medical internship at United States Public Health System on Staten Island, N.Y., he treated both servicemen and immigrants at Ellis Island, and at that time became interested in the function of the heart. Returning to Minnesota he approached his former mentor, Dr. Richard Varco, with a model of the heart he carved from plaster of Paris, and then began work as research assistant in experimental surgery. Open-heart surgery had just begun at the University of Minnesota. The need soon became apparent for a heart-lung machine, an oxygenator, to replace the human donor. With approval and encouragement from Dr. Owen Wangenstein

and Dr. C. Walton Lillehei, Dr. DeWall took on this project and in a period of less than six months in 1955, produced the first workable, portable bubble oxygenator. The DeWall Bubble Oxygenator became the model used around the world for open-heart surgery. A replica of his first oxygenator is on display at the National Museum of American History at the Smithsonian Institution. Dr. DeWall continued his cardio-thoracic surgery career as Chairman of the Department of Surgery at Mount Sinai Hospital in Chicago from 1962-1966. He then moved to Dayton, Ohio, where Mrs. Virginia Kettering was eager to have open-heart surgery performed at the new Kettering Hospital. She arranged for Dr. DeWall to come to Dayton to start the Open Heart Surgery program at the hospital, as well as serve as Chief of Surgery at Cox Heart Institute. Dr. DeWall joined the practice of Drs. Charles O'Brien and Robert Taylor and performed the first open heart surgery at Kettering hospital. Soon after his arrival in Dayton, Dr. DeWall felt the city might support a medical school to supply doctors for local hospitals. For the next three years in addition to his increasingly busy surgical practice Dr. DeWall worked to enlist the support from medical, civic and political leaders. Dr. DeWall wrote the original proposal for what became The School of Medicine at Wright State University. He also established the general surgery residency-training program at Kettering and served as director from 1970-76. In addition, Dr. DeWall authored hundreds of publications, and many of his inventions led to further medical innovations. He was a proud member of Oakwood Rotary Club, the 49er's, Moraine Society,

American Association for Thoracic Surgery, a Fellow of the American College of Cardiology and American College of Surgeons, and belonged to several other medical societies and civic associations. Dr. DeWall had a love of trees, a passion for skiing and wood-working, and he could fix absolutely anything. A natural curiosity of how things work and repairing or making things better drove his inventiveness. He will also be remembered as a true visionary. A devoted and deeply caring husband, father and grandfather, friends

and family will remember him for his sharp wit, humbleness, and gentlemanly qualities. He and Diane built a beautiful life together upon a strong foundation of faith, family and friends.

Published on August 20, 2016

Except reprinted from the Star Tribune Media Company, LLC., Minneapolis, MN

Thank You, One and All!

Dear Fellow Colleagues,

The picture below would suffice to explain my view on my professional development as a Clinical Perfusionist. One's professional development and, success if any, would depend on several interchangeable factors, commitment, peer acceptance, the love of one's profession, one's dedication to patient care, etc. The one ingredient for success in our patient care arena is one's reliance on one another. As you can readily see enclosed, William Blake sums it up very nicely! For myself, this has been one of the necessary building blocks that has served me so well over these last fifty years.

This Red Cardinal, its color faded with time, has sat in my garden for these many years. The purpose of my message to each of you is simply to say thank you for having influenced my professional growth. There are many that are no longer here to receive this greeting, however, they too are part of my collegial family.

Thank you all! May God protect and guide each of you in your continued journey in cardiac patient care. I will think of you often.

Warmest regards,
Jim

Jim Mac Donald, CPC®, CCP (Emeritus)

See Jim's 1993 Thomas G. Wharton Memorial Lecture on the following pages.



1993 Thomas G. Wharton Memorial Lecture

"On A Personal Note....."

James MacDonald, CCP, CPC
London, Ontario, Canada

Fellow members of the American Academy, Mr. Mead, fellow perfusionists, ladies and gentleman - As the incumbent President of The American Academy of Cardiovascular Perfusion, it is indeed my pleasure to deliver to you today, the Thomas G. Wharton Memorial Lecture. To present this lecture is a privileged responsibility given each year to the Academy President and one which to date, has been honorably exercised by our previous presidents. This is a special time set aside each year by the Academy to honour the memory of an individual whose individual commitment made a difference. Please bear with me this morning as I deliver this address to you, the Academy membership.

Who Was Thomas Groth Wharton?

Thomas Groth Wharton was a dedicated individual who helped perfusionists to envision their rightful role as an allied health care professional. His name was synonymous with dedication and professional commitment. He dedicated his efforts towards the common good of others so they would realize their full potential. He was a genuine friend to perfusionists and played a key role in the formation of the Academy. Tom Wharton was only too happy to give others the credit for his considerable labors. He was an individual who was eager to remove himself from the spotlight and place it on someone else. Tom was instrumental in the early recognition of the need for a professional organization such as the Academy. His untimely death in 1980 removed from our midst a dedicated and committed person. The Academy that Tom Wharton helped to initiate, he left for you and me to carry on. Someone once wrote that Tom Wharton had one inability. He could not say "no". Today might be as good a time as ever to review and reflect on our personal commitment to our professional organization. My presentation today will address my views on professionalism. Thus the title, "On A Personal Note". It is often times difficult to put into the written word one's personal feelings and impressions regarding their selected profession. There is something about giving a memorial lecture that causes one to review their own professional life and reflect on one's personal involvement. Although I will not attempt to chronicle my professional life, I will attempt to provide you with my personal prospective of characteristics that I feel have been of assistance to me.

Standing before you today is, for me, a humbling experience. In 1980 I attended my first Academy meeting. In 1981, the year after Tom Wharton's untimely death, I presented my first paper before the Academy membership. In 1983, the Active and Senior membership of The American

Academy of Cardiovascular Perfusion (AACP) saw it fit to vote me in as an Active member. I could not have envisioned that my continued involvement as an Academy member would result in my standing before you today as the President of this dedicated professional body. I have been deeply honoured and, at the same time, humbled by your recognition of me. Permit me to explain how I first became involved in the Academy.

My Introduction Into The Academy

Many of you present here today perhaps are not aware that I am not an American citizen. As a Canadian, I was indeed fortunate to be involved in and directly associated with the initial formation of the Canadian Council of Cardiovascular Perfusion. In the late 1970's I had decided to work toward the establishment of a national society. Several years had gone by and the time had come to intrust others to carry on what I and others had started. These others of whom I speak were my younger professional colleagues. I must admit to you today that I was concerned about the commitment of these younger perfusionists. Would they build from the foundation that I and others had started? Could they carry on the commitment that I knew to be so necessary? As was true in the growth of all perfusion organizations, the younger perfusionists were eager to seek a more structured professional identity within the Canadian medical community. These eager individuals would go on to exhibit a positive influence on the continued professional growth of this Canadian organization. They give it the dedication and attention to detail that I knew to be so necessary for successful continuation. Time now allowed me to seek another journey into my professional life. The American Academy of Cardiovascular Perfusion accepted me and gave me the opportunity to pursue with them their professional aims and objectives. My colleagues in Canada had also committed themselves and from that commitment grew a strong, well organized national organization now called The Canadian Society of Clinical Perfusion.

On a personal note, please allow me to give you an example of what I mean by professional commitment. Reflecting back to these earlier days, I remember being asked by my friend and co-worker, Andrew Cleland, if he might be able to participate in the Canadian perfusion community. I remember asking Andrew why he would want to get directly involved in the perfusion community. His answer was that he wanted to become involved professionally with other perfusionists. He wanted to seek an

identity with his peers. He wanted to belong to the perfusion profession in a more dedicated way. From that day his commitment to the growth of his profession grew. The Canadian perfusionists recognized his commitment. Several years have passed since that conversation. In support of me as the President of the American Academy, I am very pleased to have present here today my valued friend and daily co-worker, Mr. Andrew Cleland, the President of The Canadian Society of Clinical Perfusion. Our common commitment to professional growth was shared.

The time does come when one should seek out organizational commitment. The Academy allowed me the opportunity to belong to an organization of individuals that not only talked about professionalism but demonstrated it each year by continued appropriate professional actions. The Academy continues to serve as a catalyst for my continued professional growth. On a personal note, I feel that I have gained professionally by my direct organizational involvement with my peers.

Peer Involvement And Its Responsibilities

I want to address the concept of peer involvement and its responsibilities. Is organizational commitment and involvement with your professional peers a necessary prerequisite for continued professional growth? For example, involvement in The Academy will provide you with expansion of your knowledge base as well as an avenue for the exchange of technological knowledge. The purpose of The Academy is to encourage and stimulate investigation and study which serves to increase the knowledge of cardiovascular perfusion, and to correlate and disseminate that knowledge. The Academy will provide you the avenue whereby you can focus on common concerns, share your professional commitment as well as identify with your peers. Identity with your peers is important because it will allow direct interaction and comparisons of perfusion methodologies. This will enable you, for example, to focus on acceptable standards of patient care. In belonging to a peer group, we become a reflection of one another and therefore preserve and enhance the professional image of each other. Organizational involvement requires commitment. Such commitment will promote self confidence and provide the impetus that is necessary for continuing one's professional career. Peer recognition should not be taken for granted. Peer recognition should never lead to a feeling of superiority. Peer involvement should not contrast one against the other and lead one to a feeling of superiority. A feeling of superiority is a self imposed identity problem. It can lead to self delusion. Such self delusion can be harmful to the individual as well as misrepresenting the true ideals of the national society that you belong to. A feeling of self importance can ultimately deform your commitment to your calling and dilute your acceptance as a valued colleague. Conscientious professionals do not exhibit such traits. Peer involvement should, therefore, promote an organized approach to

quality in health care delivery and allow you and me the opportunity to grow together. It takes commitment to obtain personal and professional growth.

As clinical perfusionists, you and I, through study and clinical experience implement the technological knowledge and experience that we each have gained by the implementation of extracorporeal circulation and related supportive interventions. Such clinical experience must and should be shared within the environment of one's profession. In the daily performance of our duties as perfusionists, we must interface with other health care professionals such as surgeons, nurses and anaesthesiologists. On a personal note, when I am in my operating room I feel a sense of security in knowing that I can rely on my peers in The Academy for support and guidance. I would not and have not hesitated to tap that organizational support. This feeling of belonging to the Academy is for me, a comforting feeling. I am confident in my validity and that of my profession. You and I collectively must have an organized approach to health care decision-making. We take our rightful place as qualified and essential members of the health care team. Like other professionals we have completed some degree of formal training, passed qualifying examinations, and then are set free to carry on the perfusion related responsibilities that make our professional commitment so necessary. We are called Certified Clinical Perfusionists. For recent graduates and those you have been recently certified, your professional journey has only begun. As a recent graduate, you do not as yet have the clinical acumen of others who have been in the profession for longer periods of time. Ask yourself why you are present here today. I am sure that your answer is that your continued professional development requires an occupational and professional commitment to educational formats and meetings such as that provided to you today by The Academy. Do not doubt the continued commitment of the American Academy in helping you to engage and stimulate your professional growth. The word Academy is synonymous with education. We do not just talk about it, we demonstrate it yearly through our scientific seminars, fireside chats and presentation of scholarships to graduating students. Your presence here today denotes your interest and your approval of what we as Academy members are about. For those present who are not associate members, the Academy not only welcomes you, we also take note of your presence here today. As President of the Academy, please accept this direct invitation to become involved in our professional organization. Your personal contribution will enhance your professional knowledge and that of your peers. Please seek out any member of the Academy. Ask direct questions of our membership. If you are serious about your commitment to membership in The Academy and should wish to become directly involved in strong organizational commitment, perhaps the American Academy

Continued on Page 12

Continued from Page 11

of Cardiovascular Perfusion will provide the spark that will ignite the flame of your professional growth and development. Look around you today. Take note of the names of those who are presenting. Decide to add your name to this list. Get involved. Make the decision to share your individual professionalism. Those of us who have been involved in our profession for an extended period of time know well this word commitment. To become a member of The Academy does require ongoing professional commitment. It requires those who choose to serve, to do so generously and freely. Talking about it is one thing, doing it is quite another.

Commitment To The Patient - A Shared Responsibility

On a personal note, please allow me to express my views on another extension of our professional identity, our commitment to our patients. I am not talking about unstructured commitment that could lead a perfusionist to burnout. As individuals, each of us must learn to cope with high degrees of stress in our daily clinical lives. We should and must support each other in the recognition that this is a real possibility. On a personal note, have you ever wondered what your colleagues would think if they could watch you perform your daily clinical duties in the operating room. I am sure that each of us present here today would feel that our perfusion practices are beyond reproach and certainly follow acceptable standards of practice such as those adopted by the Academy in September of 1987. In North America alone, each year Perfusionists assemble the heart lung machines, CO2 flush and prime the extracorporeal circuit, initiate, maintain and discontinue cardiopulmonary bypass over 350 thousand times. During this Academy meeting, we will share in our methodologies that hopefully will result in an organized and acceptable standardized approach to our specialized involvement in direct patient care. Being a perfusionist is much more than establishing the extracorporeal circuit of choice and conducting cardiopulmonary bypass. We must remind ourselves that the recipient of our specialized care, the patient, deserves special mention.

Please allow me to expand on this. In a chapter from the book entitled "The Heart of the Healer" by Ernesto Contreras, M.D.; the chapter "Passion, Compassion and Medical Practice", reminds the reader not to consider the human body purely as a complex machine that can be repaired by advanced technologies. As perfusionists we speak of interfacing the extracorporeal circuit with all its associated pathophysiology. Collectively, as an organized group of professional individuals, we should from time to time speak openly of our commitment to our patient, the recipients of our specialized technology. Indirectly we do just that by our attendance at this meeting. On a personal note, have you ever felt that no one in your operating room, save the other perfusionist, really understands or can appreciate the true

responsibility that you as a perfusionist have. I realize that we get support and recognition from the surgeon, for example. After all, if you and I do our job perfectly, the result could be that no one will notice. We know that to be a clinical perfusionist is to belong to a quality control profession. For the well being of our patients, we cannot make a mistake. When mistakes are made, it is just as devastating to the perfusionist as it might be to our patient. If I had one wish for you today, it would be that I could shield you from the reality of a perfusion misshape. If not at first, in time other health care personal in the operating room professionals will eventually understand your unique and important role. That sometimes feeling of isolation soon disappears. If from time to time you should feel that isolation, console yourself in the fact that your patient also needs understanding, compassion and sensitivity. From time to time you and I must explore our personal commitment to our patients. Into your hands and mine, the patient has entrusted their very well being. We must be protective of that trust. We must reflect on our personal and unique commitment to patient care. As perfusionists, we are a selected few in numbers. Did we not become perfusionists so that we could positively affect the lives of others by offering them freedom from pain and relief from suffering. This is not only the domain of nurses and surgeons. I mention this today only to remind ourselves that our inability to seek organizational affiliation will have a negative effect on your health care delivery. We must share in our commitment.

Similar to the physician, we as perfusionists, must also follow two fundamental rules: 1) The Golden Rule: Do to your patient as you would have done to yourself. Is this not a basic precept in training our students? Do we not teach our students to treat the patient as if they were a family member. 2) The Second Commandment: Love your patient as yourself. No code of ethics can demand this of you and me. This moral/ethical decision must be exacted from ourselves in our daily care of the patient.

On a personal note, I entered our profession in the days of the rotating disc oxygenator, whole blood primes, stainless steel connectors, bone wax and hospital-made tubing packs. I tell you this today because I am very proud of my initial thrust into perfusion. Believe me when I tell you that from initial beginning grew my deepest love for and respect of our profession. That I could eventually play a role in operating a heart lung machine was something that I had wondered about as I assisted the cardiac surgeon during those early days in open heart surgery. I was in awe of these people called heart lung technologists. My duties as an operating room technician caused me to gain insight into the importance of this specialized role. These heart lung technologists were a different breed of people. This unique interfacing with the patient required such dedication. We lost many of our patients in those earlier days.

It would not be until later that I would realize that other perfusionist had traveled this same road. For the time being, my whole world would exist in that one operating room. When I reflect back to those earlier days I think of the tremendous opportunity presented to the younger perfusionists today in being able to share experiences through peer involvement. Anyway, these heart lung technologist fascinated me. I wanted more involvement in this life and death drama. The chief technologist and the chief cardiac surgeon realized my interest in perfusion. I suppose I drove them crazy with my constant questioning. These professionals demonstrated to me what respect for the patient meant. No patient was ever to be called the valve, the ASD, VSD, etc. To do so was to bring about much indignation. To this day, when the patient first enters my operating room I am still humbled by my personal opportunity to participate in the well being of this person. From that moment on the patient becomes dependent on me as the perfusionist. I become committed to his/her total care. It is a sacred bond. The stranger becomes my patient. Perhaps this is what Dr. Contreras is referring to. We must integrate the technology of perfusion so as to benefit the person called a patient. To me, they are one in the same. I often find it interesting that we would not hesitate to show empathy to a neonate, a baby or pediatric patient. We would agree that all patients, no matter what age, deserve and expect your professional best. As perfusionists we may feel our contact with the patient to be somewhat isolated. If this is true, go over to your patient and make eye contact. If appropriate at that moment, tell him who you are and also tell him that YOU will take excellent care of him. Do not be afraid to demonstrate caring for your patient in the operating room if others are too busy with the day to day routine. Lead the way and perhaps others will follow your example. Demonstrating your professional commitment to your patient will remove the temptation to treat only the disease pathology and not the patient. This is not reserved only for the surgeon, nurse, etc. You and I must share in this responsibility.

The Relationship Between The Mentor/Mentee

For those of us who accept the added responsibility of teaching students in the clinical arena, your commitment continues. You then become the mentor. The development and exploration of ideas is promoted within this mentoring relationship. It is for me an exciting and humbling experience to share ones years of acquired clinical knowledge with others who have made a conscious decision to join our profession. Teaching the student requires the development of a mentor/mentee relationship. We must at first make the assumption that this individual has at the least a basic understanding of what his/her chosen profession will expect of them. Within each perfusion school, teaching formats are developed and the perfusion instructor must follow established guidelines which dictate an organized and acceptable teaching format. On a per-

sonal note, when I first introduce the student perfusionist to the operating room, I often times feel quite humbled by the experience. This operating room is the daily environment where you and I practice the art and science of perfusion technology. University Hospital in London, Ontario is a teaching hospital associated with the University of Western Ontario Medical School. As a Patient Service Department within the hospital, several years ago my department accepted the added responsibility in becoming a clinical training site. Each year it is both my responsibility and pleasure to lecture perfusion students on the History of Cardiac Surgery And Extracorporeal Circulation. The school allows me three hours to complete this lecture. These three hours allow me my initial interface with these individuals who have demonstrated a desire, not a commitment as yet, but a desire to become what it is that you and I are. In the introduction to perfusion, I try to point out that this profession with all its associated technology will expect, if not demand, an intense interaction with the patient and latter, if they are successful, the opportunity to involve themselves in the perfusion community. I discuss the uniqueness of our responsibilities as perfusionists with honesty and professional pride. I then proceed to expand on the responsibilities of the clinical perfusionist and how these responsibilities may differ from other health care professionals. I try not to isolate the student from the reality of our world. I am also careful not to lose this initial opportunity to self importance. I emphasize our unique involvement with the cardiac patient. Throughout the lecture I speak respectively of our success and passionately of our failures. I explain how we as perfusionists can positively or negatively affect the very well being of the patient. Within the confines of our profession, I share with them that this new professional venture will carry with it considerable and different responsibilities. Meticulous attention to the every technological detail is essential. Injury or death to a patient is a possibility if strict adherence to an established protocol is not maintained. I teach that our responsibilities requires an intensity of focus. I remind the student that a perfusionist must exhibit honesty, compassion, enthusiasm and yes that word commitment does come up. I teach that the operating room is where we put scientific theory into sound clinical practice.

Students must be treated in a professional manner and they can only learn if you as a professional are genuinely connected to their individual needs. Sometimes, you must support them in their deciding whether to continue in this specific profession. Teaching is more than lecturing. It is demonstrating clinically to the student what it is that they have learned in the classroom. You must transform your teaching on perfusion technology into the clinical reality of what it is that we do and at the same time you must focus on the patient as the ultimate recipient of the your individual care. As a mentor you must encourage full development

Continued on Page 14

Continued from Page 13

of potential, even when it means extending beyond the mentor's own abilities. When you cannot find an answer in a text, involvement with your peers can be of great assistance to you in answering that question. The clinical interfacing of the student into our working environment must be exercised as if it were a sacred trust. It is the direct clinical interfacing of that knowledge, combined with your personal desire to impart your clinical expertise, that hopefully will ensure the successful integration of this student into further professional commitment. Like it or not, you must become the role model and the student must decide if your technological skills as a perfusionist should be emulated. To have such influence on the student may result in his/her successful integration into the network of our profession.

A Definition Of A Professional

As perfusionists we must be able to define the criteria that must be fulfilled to insure that we can indeed call ourselves professionals. We all realize that to be called a professional is to be held in high regard in society and is expected of us by other health care practitioners and licensing bodies. In society there is little doubt as to the professional identity of the cardiac surgeon, the nurse or the anaesthetist. To obtain the status of a professional is one thing. To be able to practice it and act it out is quite another. Wilbert E. Moore, in his book entitled "The professions: roles and rules" defines a professional as having the following criteria: practising a full time occupation which comprises the principle source of his income, a commitment to a calling; that is, the treatment of the occupation and all of its requirements as an enduring set of normative and behavioral expectations, authenticated membership in a formal organization that will protect and enhance its interests, advanced education which allows useful knowledge and skills obtained through specialized training, service orientation so as to perceive the needs of individual or collective clients that are relevant to his competence and to attend to those needs by competent performance, and finally, autonomy that is restrained by responsibility, thus allowing you and me to proceed by our own judgement and authority. What I have just described is the basic criteria that defines the role of the recognized professional. This allows the clinical perfusionists to fit within the context of the health care system as a whole.

Commitment To A Calling

Does commitment to the perfusion profession go beyond the clinical commitment of the hospital? Does it involve the identification with professional peers and the profession collectively? And thirdly, is such a commitment expected for both continued professional growth and clinical competence? Does this individual and collective commitment result in a common bond. The response should be a definite yes. Your individual decision not to commit your-

self to your professional colleagues will limit the sphere of your practice and would then reflect in your ability to provide optimal patient care. The individual commitment of each person attending this meeting is necessary in our continuation as a professional body with a common desired response. Commitment cannot be legislated but your colleagues can insist on it. The Academy does insist on participation from all its members over a three year period. In effect, to remain as an Academy member we are asking for and insisting on your professional commitment to our educational organization. It is a necessary prerequisite for continued membership. Membership opens the door and commitment insures that it is kept open.

Professional Conduct

To be a Professional does carry with it added responsibilities. For example, the professional conduct of the clinical perfusionist must be beyond reproach. If, for example, I should undertake to do something which would be considered to be unprofessional, it would reflect not only me but also my peers. To address this problem, The American Academy and other organizations develop a code of ethics and/or standards of practice. We then in effect demand appropriate conduct from each other to insure that our common bond is not compromised thus reducing the risk of impropriety. In the end, one's conduct is self regulated by the organizational commitment and continued professional service to the patient is maintained. If as a perfusionist, your personal caring of the cardiac surgical patient does not receive a very high priority, you fail in the attempt to provide dedicated professional service and the patient is compromised. Perfusionists who compromise patient care are not tolerated. Belonging to an organization of peers that demonstrate these norms and provides continuous demonstration of dedicated professionalism is to be a member of The American Academy of Cardiovascular Perfusion. Each of us must measure within ourselves our personal commitment to our profession. As the President of The American Academy of Cardiovascular Perfusion, and on behalf of our membership, I encourage you to become committed to your profession. The Academy is the place for that commitment. Tom Wharton would agree. Hopefully, you do also.

Bibliography

The professions: Roles and Rules, Wilbert E. Moore, Russel Sage Foundation, New York

The Heart of the Healer, Edited by Dawson Church and Dr. Alan Sherr, Published by Aslan Publishing, New York, N Y, 10032 and Mickleton House, Mickleton, Gloucestershire GL55 6RY, England.

Reprinted from the 1993 Proceedings of the American Academy of Cardiovascular Perfusion.

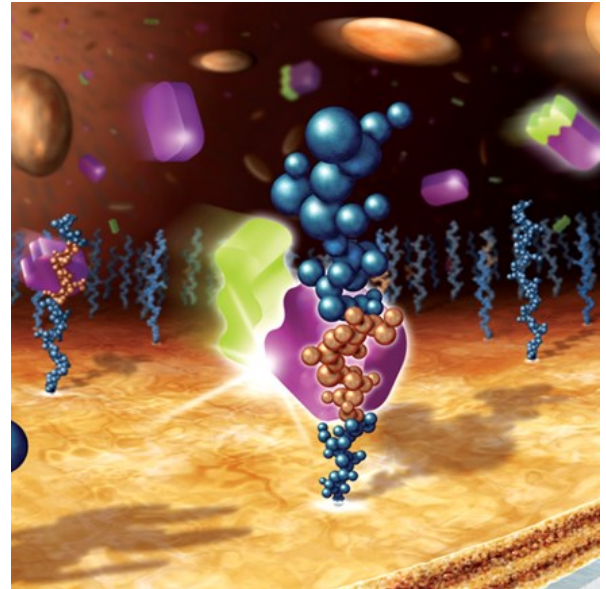
All About our Corporate

Partners

New Name, Same BioActive Surface

Cortiva™ BioActive Surface, formerly marketed under the Carmeda® brand name

Beginning late summer 2016, the biosurface which Medtronic has manufactured and marketed under the Carmeda® trademark is being renamed **Cortiva™ BioActive surface**. Although our use of the Carmeda trademark is expiring, the composition of the bioactive surface has not changed. Cortiva™ BioActive surface has the same formulation and is manufactured using the same process, in the same facility, and to the same specification as when it was manufactured and sold by Medtronic under the Carmeda® name.



We are pleased to continue offering you this bioactive surface, which has the largest body of peer-reviewed clinical and scientific evidence reporting the beneficial impacts to both adult and pediatric patients of any coating used for cardiopulmonary bypass today. Please contact your local Medtronic Perfusion sales representative with any questions, and to learn more about how Cortiva BioActive surface can benefit your patients.

Cortiva™ BioActive surface formerly marketed under the Carmeda® brand name. Carmeda is a trademark of Carmeda® AB "(Sweden)."

THE ACADEMY TO OFFER LIVE WEBCAST

The American Academy of Cardiovascular Perfusion will again be offering a live webcast of our 2017 Annual Meeting in San Diego. The General Sessions of the meeting will be broadcast in high quality streaming video. There will also be an opportunity for attendees to ask questions, thus qualifying for Category I CEUs from the American Board of Cardiovascular Perfusion.

ON BY PASS

Perfusionists: Are We “Pig-Pen” of the Surgery Department?



“Pig-Pen” is a loveable character featured in the comic strip *Peanuts* by Charles Schulz. He is perpetually filthy, and seemingly content with the dusty cloud that follows him everywhere.

One of Schulz’ early strips pronounces “Pig-Pen” as the only person capable of getting dirty in a snowstorm. While the hopeless Charlie Brown accepts him unconditionally, “Pig-Pen” annoys the rest of the *Peanuts* characters with his malodorous presence. In his last comic strip appearance dated Sept. 8, 1999, “Pig-Pen” reveals that his constant state of grime is actually a source of embarrassment and shame. How fitting that Schulz gives “Pig-Pen” the ideal exit - a conscience - a desire to be clean. We’re left imagining “Pig-Pen” soaking in a hot bath somewhere, and then dancing the night away with Peppermint Patty.

The recent issue of heater-cooler contamination has given perfusionists a black eye. As the operators of this equipment, we’re culpable in ensuring that the devices are safe for patient use. And while our knowledge and awareness of water-borne bacteria transmission has undoubtedly been

heightened, the literature reveals that all too often it’s the perfusionists themselves – in addition to the apparatus we use – that are the direct cause of infection. For instance, in 1958 an 11 year-old girl underwent VSD repair using a Mark-Cooley oxygenator and Sigmamotor pumps (1). Postoperatively, the patient’s temperature spiked to 102 degrees F. Blood cultures grew *Staphylococcus aureus*. Despite vigorous antimicrobial therapy, the patient’s condition deteriorated and she died. Nasal cultures were subsequently taken from all medical personnel who came into contact with the patient. One member of the team, “... responsible for the assembly of the heart-lung machine ...” was found to harbor the exact same isolate of *Staphylococcus aureus* as the patient. Similar articles published in 2001 and 2002 identified the perfusionist as the carrier of the precise strain of *Staphylococcus aureus* responsible for the outbreak of infections in both adult and pediatric heart surgery patients (2,3). One more example is the study of air contamination during cardiac surgery procedures conducted in Finland in 1990 (4). Using agar plates, the rate of aerobic bacteria sedimentation was examined in three zones of the operating room: the perfusion area, the anesthesia area, and the operative area (instrument back tables). *Staphylococcus epidermidis* was the most commonly-seen bacteria, although *Staphylococcus aureus* and other gram positive cocci were also cultured from the plates. In terms of absolute numbers (colonies), the sedimentation rate was highest in the perfusion area. The authors attributed

Kelly D. Hedlund, MS, CCP

Hayes, Kansas

this finding to “... *more physical activity in the perfusion area than around the operating table.*”

In the early days of open-heart surgery, the pump oxygenator was often filled with Zephiran solution (benzalkonium chloride) in order to disinfect the extracorporeal surfaces. Unfortunately, at least two articles reported fatal *Pseudomonas aeruginosa* infections from this mode of “sterilization” (5,6). Plastic single-use products soon replaced the metal and glass components of the heart-lung machine. This, combined with today’s proven sterilization processes such as ETO gas or gamma irradiation, virtually assures perfusionists that their tubing packs are germ-free. Fast forward to 1993, and arguably the first article on heater-cooler contamination appeared in Perfusion Life magazine entitled, “*What’s Growing in Your Cooler/Heater?*” (7). The authors (both employees of Sarns) queried perfusionists about their heater-cooler cleaning routines, and randomly collected water samples for bacteria count determination. Phase two of the study asked the participating perfusionists to adopt a weekly cleaning regimen using a sodium hypochlorite solution. Again, water samples were taken from each heater-cooler unit for culture. The study findings were remarkable on several fronts. At the outset, it was evident that frequency of cleaning was far below that recommended by the manufacturer. As such, baseline bacteria levels averaged more than 175,000 CFU/mL (the EPA standard for drinking water is 500 CFU/mL). *Pseudomonas* species were the most frequently detected bacteria. In addition, sanitizing procedures were not well-defined or even documented. When adhered to, however, the cleaning regimen drastically reduced microbial levels to an average of 660 CFU/mL – a reduction of 10,000 fold in some units. Nevertheless, at least one participant believed that, going forward, most perfusionists simply wouldn’t comply with the manufacturer’s cleaning instructions – remarking that “... *it takes too much time to clean each unit once a week.*” Other articles too have sounded the alarm bell about heater-cooler contamination. A 1996 publication linked an outbreak of gram-negative infections in open-heart surgery patients to contaminated pressure-monitoring equipment (8). Cultures taken from a nearby heater-cooler during the investigation grew *Pseudomonas aeruginosa*. A similar occurrence of infections was reported in 2001 and was traced to a scrub nurse whose thumbnail

was chronically colonized with *Pseudomonas aeruginosa* (9). As part of the overall operating room inspection, the heater-cooler was dismantled (presumably by the manufacturer) for closer analysis and culturing. Significant bio-film formation was discovered, and *Pseudomonas aeruginosa* was present on the internal tubing and main check valve. Lastly, the article by Weitkemper et al. published in 2002 puts perfusionists and manufacturers on notice that heater-coolers are sources of out-of-control microbial growth and infection (10).

Numerous articles have appeared on the internet claiming that Keurig coffee machines are prone to mold and bacteria growth. Brita water filtration pitchers have been a recent target as well. But delve deeper into these op-ed pieces and you’ll most assuredly find a statement that reads something like, “... *my Keurig has a shiny green film at the bottom of the water tank ... it’s worked perfectly for years although I haven’t ever really cleaned it.*”

Bingo.

In 2015, the Office of Inspector General conducted a policy review of one of its VA hospitals that performs heart surgery (11). The review included the duties of the perfusion department, with special attention directed at documentation of activities. When interviewed, the chief perfusionist stated that at least four hours were spent each week sanitizing heater-coolers. However, no maintenance logs could be produced to indicate that regular cleaning took place using the manufacturer’s instructions. While current focus is on the LivaNova Sorin 3T device and its apparent ability to aerosolize bacteria into the operating room environment, the FDA has made it clear that all heater-coolers can become contaminated (12). As such, the FDA is working with all manufacturers to validate their disinfecting procedures. The recent and very timely publication by Stammers and Riley offers additional recommendations for limiting patients’ exposure to bacterial transmission (13). Unfortunately, our profession runs the very real risk of being labeled as complicit in this tragedy. For those of you still using the Sarns Dual cooler-heater, are you testing and adjusting the chlorine levels daily as stated in the operator’s manual (14)? I know I’m not. In fact, hard as I try, my maintenance logs reflect large gaps be-

Continued on Page 18

Continued from Page 17

tween cleanings. But like "Pig-Pen" - I know better – and I want to do better. So as a profession, let's collectively work harder to maintain our equipment, and lift the proverbial dust cloud that's threatening to hurt our reputation as care givers. Oh – and tonight when you get home from work – clean your coffee pot.

References

- (1) Lord Jr JW, Imparato AM, Hackel A, et al. Endocarditis complicating open-heart surgery. *Circulation*. 1961;23:489-497.
- (2) Hsu RB, Chen ML, Chang SC, et al. Perfusionist-transmitted bacterial mediastinitis. *Tex Heart Inst J*. 2001;28:60-62.
- (3) Weber S, Herwaldt LA, McNutt LA, et al. An outbreak of staphylococcus aureus in a pediatric cardiothoracic surgery unit. *Infect Control Hosp Epidemiol*. 23;2:77-81.
- (4) Verkkala K, Makela P, Ojajarvi J, et al. Air contamination in open heart surgery with disposable coveralls, gowns, and drapes. *Ann Thorac Surg*. 1990;50:757-761.
- (5) Keown KK, Gilman RA, Bailey CP. Open heart surgery. *JAMA*. 1957;165:781.
- (6) Teitel M, Florman AL. Postoperative endocarditis due to pseudomonas aeruginosa. *JAMA*. 1960;172:329.
- (7) Toigo J, Giraud S. What's growing in your cooler/heater? *Perfusion Life*. 1993;10(10):18-19.
- (8) Rudnick JR, Beck-Sague CM, Anderson RL, et al. Gram-negative bacteremia in open-heart-surgery patients traced to probable tap-water contamination of pressure-monitoring equipment. *Infect Control Hosp Epidemiol*. 1996;17:281-285.
- (9) McNeil SA, Nordstrom-Lerner L, Malani PN, et al. Outbreak of sternal surgical site infections due to pseudomonas aeruginosa traced to a scrub nurse with onychomycosis. *Clinical Infectious Diseases*. 2001;33:317-323.
- (10) Weitkemper HH, Spilker A, Knobl HJ, et al. The heater-cooler unit – a conceivable source of infection. *JECT*. 2002;34:276-280.
- (11) Department of Veteran Affairs Office of Inspector General Report No. 14-04598-461 September 30, 2015 (available at www.va.gov/oig).
- (12) <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/MedicalDevices/MedicalDevicesAdvisoryCommittee/CirculatorySystemDevicesPanel/UCM503716.pdf>
- (13) Stammers AH, Riley JB. The heater cooler as a source of infection from nontuberculous mycobacteria. *JECT*. 2016;48:55-59.
- (14) Sarns Dual Cooler-Heater Operators Manual 12283001 R/G May 1994.

Important Academy Dates

The ACADEMY ANNUAL MEETING DEADLINES

ABSTRACT DEADLINE	October 15, 2016
MEMBERSHIP DEADLINE	November 19, 2016
PRE-REGISTRATION	December 19, 2016
HOTEL REGISTRATION	December 19, 2016
2017 ANNUAL MEETING	January 19-22, 2017

Others Meetings

17th European Congress on Extracorporeal Circulation Technology
 Marseille, France
 June 14-17, 2017
 Website: www.fecect.org/invitation

2017 Annual Academy Meeting Host Hotel



The Westin San Diego Hotel San Diego, California

Single/Double Occupancy - \$209.00 per night
Reservations: 888-627-9033

Experience The Westin San Diego Hotel's 15 million dollar transformation, introducing the brand's new modern design. The hotel now has a distinctly upscale, contemporary feel, inspired by soothing elements of nature. With a complete revitalization of guestrooms, restaurant, lobby, public areas, meeting space, two new Legal War Rooms, Tangent and a new WestinWORKOUT® Fitness Studio, the newly refurbished urban retreat will transform every aspect of a stay into a revitalizing experience.



PRE-REGISTRATION FORM

The 2017 Annual Meeting of
The American Academy of Cardiovascular Perfusion



MEMBER	FEE	Amount	FIRESIDE CHAT REGISTRATION (make your first three choices each day)
Registration Fee	\$445.00	_____	Thursday Sessions 1) _____ 2) _____ 3) _____
2017 Annual Dues	\$155.00	_____	
Guest to Induction Dinner	\$100.00	_____	
Adult Guest to Workshop	\$25.00	_____	
NON-MEMBER	FEE	Amount	Friday Sessions 1) _____ 2) _____ 3) _____
Registration Fee	\$495.00	_____	
Guest to Induction Dinner	\$100.00	_____	
Adult Guest to Workshop	\$25.00	_____	
STUDENT PERFUSIONIST	FEE	Amount	Saturday Sessions 1) _____ 2) _____ 3) _____
Registration Fee	\$130.00*	Waived**	
Guest to Induction Dinner	\$100.00	_____	
Adult Guest to Workshop	\$25.00	_____	
*MUST include a letter from the school director with registration.			Sunday Sessions 1) _____ 2) _____ 3) _____
**To take advantage of the waived Student fee, you must be a current Student Member of The Academy.			
FELLOW or SENIOR MEMBER	FEE	Amount	
Registration Fee	\$445.00	_____	
2017 Annual Dues	\$180.00	_____	
Guest to Induction Dinner	\$100.00	_____	
Adult Guest to Workshop	\$25.00	_____	

PRINT OR TYPE

NAME _____

HOME ADDRESS _____

CITY _____ STATE _____ ZIP _____

HOME PHONE _____ WORK PHONE _____ FAX _____

E-MAIL ADDRESS _____ (Required for confirmation)

ANTICIPATED ARRIVAL DATE IN SAN DIEGO _____

Will you be attending the Induction Dinner on Friday evening? YES NO
(Dark Suit and Tie Required / Black Tie Optional)

Please read all instructions and information before completing this form.

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

Total Amount of Payment \$ _____ METHOD OF PAYMENT: Check** ___ Money Order ___ Credit Card ___

VISA/MasterCard # _____ Exp. Date _____ 3-digit security code _____

Credit card billing address if different from above.

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Signature _____

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

INSTRUCTIONS and INFORMATION

- o Complete each appropriate section of this form by printing or typing.
- o *All attendees are invited to the Induction Dinner on Friday evening. Attire is dark suit and tie required.*
- o Members must pay their 2017 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 5, 2017--bring it with you to the meeting.
- o No pre-registration will be processed after December 19, 2016.
- o -- **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 \$155 for the 2017 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 AACP 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 5, 2017.

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

AACP
515A East Main Street
Anncville, PA 17003

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.**

Continued from Page 1

Human error is just that, a mistake. The approach to remediating a mistake is to ask how can we prevent it from occurring again? At risk behavior is more serious, but is approached with the goal of changing that behavior. Reckless behavior is cause for dismissal!

So, you might envision a situation similar to the one described above. A "Hero" perfusionist pumps ice water through the CP heater exchanger with some kind of free standing pump. Unfortunately, the patient needs to be defibrillated one or two extra times and the circulating nurse (whose brother your little sister dumped last year at Christmas time) writes an incident report about the Home Depot ice bucket thing which goes to Risk Management. The summer intern working in Risk Management collates that report into the "Reckless Behavior" category. Suddenly, our "Hero" perfusionist is fighting for his job. OK, a little dramatic but you get my drift. What may have been viewed in the past as innovative or resourceful behavior might now be viewed as something else.

In my last AACP newsletter, I talked about some of the reasons why a clinician would expend the time and money to attend a national perfusion meeting. At the Safety Meeting, I had a small epiphany: If you are not keeping up with the changes, not only in perfusion but in health care in general, you might find yourself being viewed as a "hazard" instead of a "hero". In my Wharton Lecture in January, I plan to **attempt** to shed some light on the upcoming changes to Medicare re-imbursement and how those changes might impact our profession. Medicare is shifting re-imbursement from a volume to value system. As a profession, I believe that we need to position ourselves to respond to this rapidly changing environment. I think now, more than ever, we need to leverage the value that is derived from gathering as a group at a national perfusion meeting. I cannot think of a better place to do that than in San Diego in January. I look forward to seeing you all there.

Kevin Lilly, CCP
 President, AACP