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Spring 2023



44th Annual Seminar of The American Academy of Cardiovascular Perfusion





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AACP Annual Seminar Photos









Nathan Pagano

Quinnipiac University School of Health Sciences Cardiovascular Perfusion Program Hamden, CT

Nathan Pagano was a recipient of the 2023 Lawrence Award.

The full manuscript of this article has been submitted to the journal Perfusion for possible publication. A Primary Graft Dysfunction In Donation After Circulatory Death (DCD) Orthotopic Heart Transplantations: A Study Of Procurement Strategies And How They Compare To Conventional Donation After Brain Death (DBD) Transplants

Heart transplantation is currently the most effective treatment for patients with end-stage cardiac failure. The need for donor hearts continues to increase, prompting the expansion of acceptable criteria for donation. Donation after circulatory death (DCD) heart programs are being established worldwide and may be a safe and effective alternative to conventional donation after brain death (DBD). This meta-analysis aims to examine the incidence of primary graft dysfunction (PGD) in heart transplant recipients who received either a DCD or DBD donor heart, as PGD is the leading cause of 30-day mortality in this patient population.

The primary analysis included 165 adult heart transplant recipients receiving a DCD heart retrieved by either the normothermic regional perfusion (NRP) or direct procurement and perfusion (DPP) procurement methods. The NRP group (n=65) had a 29% incidence of PGD, and an average of 7 minutes less functional warm ischemic time (FWIT) compared to the DPP group (n=100), which had a 35% incidence of PGD. Additional endpoints of 30-day survival and mechanical circulatory support were similar in both groups, except for a lower need for VA-ECMO in the NRP group. The secondary analysis compared PGD incidence in DBD (n=8,730) and DCD (n=214) heart transplant recipients. The DBD group (34%), even with a longer average total ischemic time.

Although the substantial difference in population sizes was a considerable limitation in this analysis, numerous studies have concluded that DCD heart transplants are as safe and effective as DBD transplants, with 30-day and 1-year survival rates being proportional. Additionally, DCD recipients wait less than half the time for a donor heart compared to DBD recipients. Further research is necessary to determine the optimal strategy for procuring DCD hearts to limit PGD. Still, for heart failure patients in need of a transplant, research points toward a bright future.

Functional warm ischemic times and incidence of Primary Graft Dysfunction in DCD procurement strategies



Total ischemic times and incidence of Primary Graft Dysfunction in DCD and DBD transplants



Richard G. Berryessa

FEBRUARY 9, 1947 - FEBRUARY 25, 2023



Richard Greaves Berryessa, 76, left this world on February 25, 2023 after being surrounded by his family telling him good-bye. He was born February 9, 1947 in Ogden, Utah and was the first son of Max and Janet Berryessa, followed by three brothers, Scott, Dean, and Guy. Growing up he lived in Utah, Iran, Germany, California, and Thailand. He graduated from Provo High in 1965. He served a mission for the Church of Jesus Christ of Latter-day Saints in Hong Kong and because of political unrest, a year later was transferred to the Alaska-Canadian Mission. He met his wife Susan Reeder at LDS Hospital in Salt Lake City where he was an orderly and she was a student nurse and they were married four months later. They have been married 53 years and have three daughters: Shannon Flores, Adrien Chamberlin (Jimmy) and Lauren Eldridge (Adam). Richard has 6 grandchildren whom he adored: Mateo and Marcos, Madison and Reegan, Alexa and Makayla.

Richard spent his life in the medical field. He learned on the job to run a heart-lung machine and become a Certified Cardiovascular Perfusionist. Later he graduated from the University of Texas at Houston with a degree in Perfusion Technology and loved teaching and scientific research. He published many papers and was president of The American Academy of Cardiovascular Perfusion in 1997. He worked in Salt Lake City, Houston, Denver, San Diego, and Las Vegas. He was known for his keen intellect and his sense of humor. He loved his family, doing genealogy work, serving in the temple, BYU sports and ice cream. He has left a void in our lives.

Any memorial donations could be made to his charity of choice, the American Heart Association .

Courtesy of Palm Eastern Mortuary & Cemetery

Richard Berryessa, CCP *Henderson, Nevada*

1997 Thomas G. Wharton Memorial Lecture

Reprinted with permission of the 1997 Proceedings of the American Academy of Cardiovascular Perfusion

"Life Hangs in the Balance"

Introduction

Tom Wharton is honored with this annual lecture because he was a great friend of perfusion and perfusionists. He was at different times the Executive Director of the Journal of Extracorporeal Technology, AmSECT (The American Society of Extracorporeal Technology), and the American Board of Cardiovascular Perfusion. He was also instrumental in encouraging the formation of The American Academy of Cardiovascular Perfusion to fill a need for continuing education for perfusionists. I knew Tom more than twenty years ago when I served on the AmSECT Board. I am honored to address you today in memory of a man who contributed to helping perfusionists become better educated and more professional.

Background

In considering a subject for this talk, I first settled upon the notion that medicine in general and perfusion in particular are not as "scientific" as they should be. As an example, standards of practice should be based upon the current scientific literature. In perfusion it's impossible to reach this level of scientific application because the critical studies have not been done, have been poorly done, or are difficult to access through traditional means.

I thought that if I studied the lives of some famous scientists I might discover some character traits that we might emulate and therefore learn to become more "scientific." I settled upon two lives: Albert Einstein, a scientist who made significant theoretical discoveries, and Thomas Edison whose science impacts us in very practical ways. As I read biographies of their lives I was struck with the realization that although they were incredible scientists were not good fathers and husbands. They were not successful in an area of their lives that I considered equally, if not more, important.¹⁻²

I have always been taught and believe that "no success compensates for failure in the home." These great scientists succeeded not because of their lack of a successful home life but despite it. I decided that I would address an issue that is the greatest struggle in my life and perhaps yours too.

That is FINDING A BALANCE IN LIFE when your work is as demanding as ours is.

Balance

I will define balance as the allocation of our resources (notably time and energy) that produces lasting happiness. The way we choose to spend these limited resources is based upon what we consider to be important or valuable. We need to carefully examine how we determine what is important or we will find ourselves spending our lives doing things that others value and that we do not - Unless we are certain what is important to us and have the discipline to say "no" to that which is not important we will waste the few precious years we have on earth. (For an elegant discussion of this subject see the Wharton Lecture from 1996.³)

Values and Principles

The things we think are important in our lives reflect our values: family, education, health, interesting work, friends, etc. However, "values are subjective and internal." They are like maps, they are not the territory but attempts to describe or represent the territory. The more closely our values (or maps) are aligned with or define and describe correct principles (the territories) the more accurate and useful they will be. Principles, unlike values, are objective and external -- they are "self-evident, self-validating, natural laws" that do not change or shift. "Principles apply at all times and in all places," they are inviolate. They are not invented by us or society and "to the degree people recognize and live in harmony with such basic principles as fairness, equity, justice, integrity, honesty, and trust, they move toward survival and stability on the one hand or disintegration and destruction on the other." Principles are a moral compass, always pointing the correct way.⁴

Behavior

They way we live our lives (spend our time and energy) reflects our values, and our values reflect our principles, or lack thereof. Stephen R. Covey says that a gang member (or a gang) can have values--material wealth, companionship, leisure time, spending money, loyalty, etc. while they have few, if any, principles.⁴⁻⁵

There are only two kinds of behavior -- creative or self-destructive. Creative behavior is based upon values that reflect principles. Some examples of creative behavior are: reading, pondering, inventing, problem solving, teaching, parenting, (most) work, physical exercise, and service to others. Some examples of self-destructive behavior are: smoking, unhealthy eating habits, indulgence in alcohol, dishones-ty (lying, cheating , stealing), indolence, self-doubt, and negative self-talk. (For a perspective on this subject refer to Jerry Richmond's Wharton Lecture from 1995, delivered about three months before he passed away.⁶)

We can divide our lives into four basic areas. They are spiritual, intellectual, social, and physical. It is a valuable exercise to set your goals (short and long term) in each of these areas. I have learned that if you describe your ideal self in each of these areas and compare that ideal to your current (real) self that you have a blueprint for change in your life that can be powerful. If you then work to gradually and systematically achieve your goals to become your ideal person you must also decide how to assign priority or attach a value or weight to the goals you set.

Achieving a balance does not mean spending an equal amount of time in each area. It does mean doing the best you can to work towards enough time in each area to accomplish the most important, valuable, or highly weighted goals in all areas. For example, I may need to spend more time right now working on losing weight and learning how to eat sensibly than I will ever spend in the physical area in the future. That is a high priority physical goal, but I may only spend one hour a day six days a week working on it. The payoff for me will be greater than any I will receive by spending four hours a day at work. In the spiritual area, I have a goal to read scriptures every morning and night. The tradeoff was not reading the morning paper.

Although reading the paper with breakfast was a difficult habit to break, I consider it a waste of all but a couple of minutes. I do not have time to do both, and I know that I will be a better person as a result of the choice I made. I spend too much time in the work (intellectual) area of my life. I decided seven years ago to quit writing and presenting papers because I could not spend enough time with my wife and kids. Although I miss the intellectual stimulation the choice was the right one.

I was impressed that in Charlie's Eulogy for Tom in 1983 he said, "If we were to ask Tom what he believed his greatest accomplishment was - I know, without question, that his reply would be simply my children'."⁷ That statement says much about Tom's priorities and suggests that he made the choice to spend his time in his high payoff areas.

It is beyond the scope of this talk, and my expertise, to go into depth as to how to achieve balance in our lives. Let me suggest that you look at the references and that you begin with Steve Covey's book The seven habits of highly effective people.5 In this signal work Covey gives succinct instruction and excellent examples of how to get your life on the right track (based on principles) and keep it there. He suggests we overcome the three major forces opposing positive change or improvement which are:

1. our appetites and passions-work on developing self-control, discipline,

2. pride and pretension-resolve to work on character and competence, and unbridled aspiration and ambition-resolve to dedicate our talents and resources to provide service to others. Is that not an important part of our profession?

Covey further suggests we develop these seven habits:

- 1. be proactive- take control of your life,
- 2. begin with the end in mind-have an unparalleled concern with outcome, an overarching vision,
- 3. put first things first-do the important, not just urgent things,
- 4. Think win/win-live the philosophy of mutual benefit,

5. seek first to understand, then to be understood-listen with the intent to understand, without formulating your response,

6. synergize-use the principle of creative cooperation. Value differences, use them to improve, and sharpen the saw-renew yourself. Do not let yourself become dull, mentally, physically, socially or spiritually.⁵

Conclusion

It is my experience that people who act on principle naturally seek balance in their lives, that they make the best leaders8-9 because they know where they are going and because people want to follow them. They represent the only examples of happy people we will ever see. I am also certain that if such a person were a perfusionist that he or she would be a professional, would work hard to contribute to the scientific literature, would use that literature to improve his practice, and would be exactly the type of person we want as a member of The American Academy of Cardiovascular Perfusion.

Acknowledgments

In addition to the references cited I would like to thank my family, especially my wife Susan for her example and encouragement. Special thanks to Jeryl Kalinowski, of Goalkeepers, for her help and inspiration.

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Remembering COVID-19 and ECMO Therapy: The relationship between coagulation management, thrombotic complications, and mortality - Is standardization needed?

Background/Objectives

Coagulation management and Extracorporeal Membrane Oxygenation (ECMO) therapy regarding Coronavirus 2 (SARS-CoV-2) has created several challenges for healthcare providers since the COVID-19 pandemic emerged. Unforeseen complications while managing COVID-19 patients on Veno-venous (V-V) ECMO contributes to poor outcomes. V-V ECMO serves as a potentially life-saving therapy for COVID-19 patients with severe acute respiratory syndrome (SARS). However, minimal standardization of anticoagulation therapy for COVID-19 ECMO patients has been established. Given this knowledge gap, we used data from the Society of Thoracic Surgeons (STS), Extracorporeal Life Support Organization (ELSO), and EPIC Charting Database was utilized to conduct a retrospective review comparing COVID-19 ECMO patients' anticoagulation therapy dosage changes, protocol interruptions, rates of ECMO oxygenator exchanges, blood product usage, and mortality to non-COVID-19 V-V ECMO patients at the University of Utah Medical Center.

Methods

A retrospective review was performed of all patients utilizing VV ECMO services between June 1, 2020, and June 30, 2021, at the University of Utah Medical Center. All COVID-19 patients were assigned a retrospective PRESET Risk Score based on the University of Maryland's pre-initiation data selection. The pre-initiation data evaluated was Mean Arterial Pressure, Arterial pH, Lactate Concentration, Platelet Concentration, and Hospital Days Prior to ECMO. This score had three classes associated with it, each with an assigned predicted mortality (26%, 68%, and 93%, respectively).

The primary outcomes examined in this study were changes in anticoagulation dosage protocol, anticoagulation quantities, in-hospital mortality, and ECMO oxygenator exchanges. Secondary outcomes analyzed were Blood Product Usage, Length of Time on ECMO, and PT/PTT and INR results.

Results

Twenty patients placed on VV ECMO were identified. Of the twenty patients, nine were diagnosed with COVID-19, and the remaining eleven served as a control group. COVID-19 patients had an average ECMO length of 20 days, while control patients had an average of 16 days. All patients were initially placed on a low-dose heparin protocol on implantation. However, COVID-19 patients were found to have 28% more

Beltran M, Heard-Tate C, Stanger A, MD, and Smego D Division of Cardiothoracic Surgery University of Utah

Caterra Heard-Tate was the recipient of the 2023 Aaron G. Hill Student Paper Presentation Award . anticoagulation dosage changes and 61.8% more dosing protocol changes per patient. COVID-19 patients had a mortality rate of 44% (4) compared to 18% (2) in the control group. Three out of the nine COVID-19 patients received a PRESET Risk Class of I. The predicted mortality for a Risk Class of I was 26%, while our study displayed a 33% mortality. The remaining six received a retrospective Risk Class of II. The predicted mortality for a Risk Class of II was 68%, while our study displayed a 66% mortality. COVID-19 patients experienced six times more thromboembolic complications (ECMO oxygenator exchanges) and 26% less blood product usage. Lastly, the control group utilized both the Maquet Quadrox (8) and the Eurosets (2) oxygenators, while COVID-19 patients in the COVID-19 group, three utilized the Maquet Quadrox and one utilized the Nautilus.





Continued from Page 9



Discussion and Conclusion

COVID-19 ECMO patients are at an increased risk for anticoagulation dosage changes and heparin dosage quantity, resulting in increased ECMO oxygenator exchanges. A PRESET Risk Score has been utilized at the University of Maryland as a predictor of survival for COVID-19 patients on ECMO. Our analysis validated the University of Maryland's results of the PRESET-Score regarding COVID-19 patients who underwent VV-ECMO and accurately predicted mortality. Despite the knowledge that standardization of protocols decreases mortality and clinical complications, ECMO heparinization protocols at the University of Utah Medical Center were inconsistently applied within the EMR charting system for COVID-19 patients. COVID-19 patients experienced six times more oxygenator exchanges and 61.8% more dosage protocol changes per patient, which is significantly high compared to the ELSO Registry's data which shows the rate of oxygenator failures among COVID-19 patients to be 9%. Despite COVID-19 patients expressing hypercoagulable tendencies, our study showed that they utilized 26% fewer blood products than the control group, which defied our original hypothesis that COVID-19 patients would use more blood products given their ability to express hypercoagulable states. When evaluating mortality, our data closely aligned with ELSO's estimation, which states that this patient group experiences similar mortality to traditional VV ECMO (40%). Given the results of this study, the intervention proposed is to establish and follow standardized protocols for COVID-19 patients placed on ECMO as well as the usage of a Survival Risk Score with the intention to decrease thrombotic complications and overall mortality. Future studies comparing patient billing and cost analysis of COVID-19 ECMO hospitalizations may be beneficial.

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Important Academy Dates

The ACADEMY ANNUAL MEETING DEADLINES

ABSTRACT DEADLINE	October 15, 2023
MEMBERSHIP DEADLINE	December 1, 2023
PRE-REGISTRATION	January 18, 2024
HOTEL REGISTRATION	January 18, 2024
2024 ANNUAL MEETING	February 7-10, 2024

AACP In Search Of A New Executive Director

After 23 years, Jill and David Palanzo have decided to retire from the National Office of the American Academy of Cardiovascular Perfusion. The Academy has begun its search for a new Executive Director by forming a search committee who is currently requesting proposals from interested parties. The deadline for proposals is May 1, 2023 with interviews by the committee in June. The selected replacement will be voted on by the Fellow and Senior Members in July. The new Executive Director would assume his or her duties on April 1, 2024. If you or someone that you know is interested in submitting a proposal, please contact Jimmy Beck, Chairman of the Executive Director Search Committee, with your interest and questions (beckjam@nyp.org).



The National Office of the Academy has moved.

New Address:	P.O. Box 47
	Fogelsville, PA 18051
Phone:	610-285-2329

Welcome to New Members

The American Academy of Cardiovascular Perfusion would like to welcome the following individuals whom were voted into membership at the Closing Business Meeting of our annual meeting in Savannah, Georgia.

Fellow Members

Ashleigh LeBlanc Brad Kulat Murphy Rayle Gabrielle Ward

Members

Bendel, Marci Barletti, Shannon Cantu, Linda **Carter Stephen** Cherico, Dean De La Cruz, Kim Delong, Angela Evangelista, Anthony Ging, Amy Gray, Hannah Hammill, David Hanson, Kelsey Hawkins, Jeremy Hayes, McKenzie Holler, Jillian Ingersoll, Kenneth Jaiswal, MD, Rohit Kohl, Adam Leonor, Alexander Martin, Payton McArdle, Michelle Moyer, Philip O'Brien, Molly Safavi, Amir Stengel, Michael Stroud, Robert Timpa, Joseph Webb, David Williams, Shivani Williams, Talia Wirth. Eric

Students

Abuzir, Adel Adams, Codv Avala, McKenzie Beck, Rachel Beck, John Belk, Lakyn Bendell, Emmaline Besse, Edward Blanco, Katherine Boden, Iyleigh Boghossian, Stefan Boyd, Savannah Bruner, Samantha Califano, Michaela Causey, Chandler Chandler, Amy Clement, Nathan Curtis, Abby Egerter, Laurel Estrada. Alfredo Farrell. Benton Fives, Shelby Gavin, Jennifer Gibbs, Jalen Glidewell, Jay Gorman. Zach Hambro, Shannon Hamka, Khalil Heard-Tate, Caterra Hemesath, Lilly Hoyer, Nathan Hoyler, Phoebe Huang, Jason Jones, Elizabeth Keller, Mackenzy Killian, Brian

Kim, Catherine Kingsley, Julian Kunnen, Drew La, Andy Lacy, Holly Lalani, Noorez Low, Lauren Matthews, Stephen Moreno, David Moreno, Vivian Morgan, Kojiro Morris, Taylor Morris, Evan Navarro, Kayla Nguyen, Tony Niedzinski. Lauren Parker, Anita Patel, Ruchi Pederson, Yuan Pollard, Melissa Ray, Tia Reamer, Cassandra Rodrigues, Michael Scherpich, Tyle Sherwood, Ashley Skaalen, Alex Smikle. Sharon Stone, Amber Stoner, Shelby Stringfellow, Holly Stubblebine, Jennifer Toorongian, Colleen Vallejo, Valeria Wessel, Ashley Wicks, Lorrie Woodruff. Brandon Zavaro, John

Awards Committee Selects Winning Student Paper Presentations



Kaitlin Bannon



Brianna Burns



Caterra Heard-Tate

Six students received awards for their paper presentations at the Annual Seminar in Savannah.

2023 – Jeffrey B. Riley Best Student Paper Presentation Award (\$1000)

*Kaitlin Bannon -*Long-Term Quality Of Life After ECMO Survival

2023 – Richard Adams Student Paper Presentation Award (\$500)

Brianna Burns - Prevention And Management Of Right Ventricular Failure After Left Ventricular Assist Device Implantation: Planned Versus Unplanned Biventricular Support

2023 – Aaron G. Hill Student Paper Presentation Award (\$500)

Caterra Heard-Tate - COVID-19 And ECMO Therapy: The Relationship Between Coagulation Management, Thrombotic Complications, And Mortality - Is Standardization Needed?

2023 - Lawrence Awards (\$500)

Joshua Fine - Veno-Venous Vs. Veno-Arterial Cannulation Strategies In Extracorporeal Membrane Oxygenation For Treatment Of Neonatal Respiratory Disease

Angela McIntyre - A Quality Improvement Initiative To Increase Adult ECMO Decision-Making Abilities In A Perfusion Education Program: The Use Of 3D ECMO Simulation

Nathan Pagano - Primary Graft Dysfunction In Donation After Circulatory Death (DCD) Orthotopic Heart Transplantations: A Study Of Procurement Strategies And How They Compare To Conventional Donation After Brain Death (DBD) Transplants



Joshua Fine



Angela McIntyre



Nathan Pagano

2024 Annual Meeting



Nashville, Tennessee



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