ERAS® CARDIAC

NEWSLETTER

Sept. 10, 2022 | VOLUME 05 | ISSUE 03

Editor: Rawn Salenger, MD

EDITOR'S **NOTE:**

We have a special issue of the ERAS Cardiac Newsletter this quarter. We have included three articles which are especially focused on the patient experience, to help remind us that patient-centered care should be one of our top priorities. We have also included an excellent article by Dr. S. Chris Malaisrie reviewing the importance of screening for, and ablating, atrial fibrillation during cardiac surgery. We hope our readers find this information practical and useful in caring for patients.

Rawn Salenger, MD
Editor

PATIENT-REPORTED EXPERIENCE MEASURES (PREM) CAN IDENTIFY AREAS FOR IMPROVEMENT

Alexander Gregory, MD, University of Calgary, Alberta, CA

There are a variety of Patient-Reported Outcome Measure (PROM) tools that have been applied to cardiac surgery patients.[1] Patient-Reported Experience Measures (PREM), though familiar to hospital administrators, are less commonly utilized by clinicians. A PROM is a tool used to capture a patient's report of their health, quality of life, or functional status associated with the health care they have received. In comparison, a PREM provides insight into the patient's experience and satisfaction with that same health care interaction. In the United States, a commonly used PREM is the Hospital Consumer Assessment of Healthcare Providers and Systems, or HCAHPS. The HCAHPS survey consists of 29 questions, with 19 of these focused on the fundamental aspects of a patient's experience.[2] It includes ratings of communication with the healthcare team, responsiveness of hospital staff, cleanliness/quietness of the hospital

>> continued on page 3

POST INTENSIVE CARE SYNDROME (PICS)

Amanda Rea, CRNP Sarah Holler, RN, University of Maryland St Joseph Medical Center

There are more than 5 million admissions annually to intensive care units (ICU) across the United States, with cardiac surgery patients making up more than 900,000 of those patients. As we have improved the standardization of care and survival for short-term outcomes, the impact on patients' quality of life after critical care hospitalization remains profound. It is estimated that more than 50% of patients who survive critical

>> continued on page 4

MORE **INSIDE:**

THE EVIDENCE FOR TREATING ATRIAL FIBRILLATION DURING CARDIAC SURGERY

S. Chris Malaisrie, MD, Bluhm Cardiovascular Institute, Northwestern University, Northwestern Memorial Hospital, Chicago, IL

Atrial fibrillation (AF) confers a 5 times greater risk of stroke,[1] 5 times greater risk of heart failure, and 46% greater mortality risk. Preoperative AF before coronary artery bypass graft (CABG) is an independent risk factor for higher in-hospital morbidity and mortality, and results in higher rates of long-term death and stroke/systemic embolism (SE).[2] Patients with AF who undergo concomitant surgical ablation (SA) have improved long-term survival, lower long-term stroke risk, and higher rates of freedom from AF compared with patients with untreated AF.[1, 3-5] A Medicare-linked Society of Thoracic Surgeons (STS) database showed that concomitant SA of AF with CABG was associated

>> continued on page 3

IS A BARISTA THE NEXT MEMBER OF YOUR ERAS TEAM?

Alexander Gregory, MD, University of Calgary, Alberta, CA

Enjoying a cup of coffee to start the morning is a common activity across the globe. But could including a cup of coffee on the day of cardiac surgery be a consideration for an ERAS program? A recent review in the Canadian Journal of Anesthesiology suggests that it might be.[1] Pleticha and colleagues provide an excellent review of the physiologic effects of caffeine, including the negative impact of withdrawal on chronic caffeinators. For individuals who regularly consume > 100 mg of caffeine per day, which is approximately one 8 oz. cup of regular brewed coffee or three 12 oz. cans of cola, even brief cessation can result in a constellation of withdrawal symptoms (Table 1).[2] Clearly, caffeine withdrawal has the potential to impede post-operative recovery and negatively affect the patient experience. There is a paucity of prospective data on the effectiveness of caffeine supplementation in preventing withdrawal, with no studies to date including cardiac surgery patients. Two existing randomized trials on ambulatory surgery patients demonstrated caffeine supplementation reduced the incidence of post-op headache in patients who abstained from their usual morning coffee.[3,4] Beyond prevention of withdrawal, caffeine supplementation may also improve peri-operative physiology and promote multiple aspects of recovery. This includes earlier emergence from general anesthesia, augmented ventilatory response to hypoxemia/hypercarbia, improved bowel function, and supplemental analgesia.[5-8] There are potential detrimental effects of caffeine supplementation in the perioperative period, though mostly related to higher doses of > 400 mg. These include insomnia, restlessness, and nausea.[7] Although caffeine is typically viewed as promoting arrhythmias, authors of a single study on patients undergoing CABG found that there was no increase in the incidence of post-operative atrial fibrillation.[9] The recommendations for NPO status have already been modernized as an element in many ERAS programs, while others additionally include a carbohydrate beverage. It would be feasible, within this existing framework, to screen for chronic caffeinators and encourage them to consume a cup of black coffee (as milk or cream is not a clear fluid) in the morning prior to surgery. Alternatively they could have oral or intravenous caffeine supplementation, although I suspect most patients would prefer to adhere to their daily morning routine if possible. The benefits of peri-operative caffeine, to prevent withdrawal of promote recovery, have not been well-studied. This could be an interesting area of future study in cardiac enhanced recovery to explore it's potential to improve patient outcomes and satisfaction.

THERE IS A PAUCITY OF PROSPECTIVE DATA ON THE EFFECTIVENESS OF CAFFEINE SUPPLEMENTATION IN PREVENTING WITHDRAWAL, WITH NO STUDIES TO DATE INCLUDING CARDIAC SURGERY PATIENTS.

Depressed mood	Loss of vigour
Flu-like symptoms	Lower systolic blood pressure
Headache	Reduced energy levels
Irritability	

Table 1: *Symptoms related to caffeine withdrawal*

1. Lau WC, Shannon FL, Bolling SF, et al. Intercostal Cryo Nerve Block in Minimally Invasive Cardiac Surgery: The Prospective Randomized FROST Trial. Pain Ther. Dec 2021;10(2):1579-1592. doi:10.1007/s40122-021-00318-0

2. Graves CE, Moyer J, Zobel MJ, et al. Intraoperative intercostal nerve cryoablation During the Nuss procedure reduces length of stay and opioid requirement: A randomized clinical trial. J Pediatr Surg. Nov 2019;54(11):2250-2256. doi:10.1016/j.jpedsurg.2019.02.057

3.Pilkington M, Harbaugh CM, Hirschl RB, Geiger JD, Gadepalli SK. Use of cryoanalgesia for pain management for the modified ravitch procedure in children. J Pediatr Surg. Jul 2020;55(7):1381-1384. doi:10.1016/j.jpedsurg.2019.09.016

4. Zhao F, Vossler JD, Kaye A. A multi-institution case series of intercostal nerve cryoablation for pain control when used in conjunction with surgical stabilization of rib fractures. J Cardiothorac Trauma. 2019;4(1):28-34. doi:10.4103/jctt.jctt_12_19

5. Engelman DT, Ben Ali W, Williams JB, et al. Guidelines for Perioperative Care in Cardiac Surgery. JAMA Surg. 2019;154(8):755. doi:10.1001/jamasurg.2019.1153

6. Chou R, Gordon DB, De Leon-Casasola OA, et al. Management of Postoperative Pain: A Clinical Practice Guideline From the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Commi. J Pain. 2016;17(2):131-157. doi:10.1016/j.jpain.2015.12.008

7. Overstreet DS, Penn TM, Cable ST, Aroke EN, Goodin BR: Higher habitual dietary caffeine consumption is related to lower experimental pain sensitivity in a community-based sample. Psychopharmacology (Berl) 2018; 235: 3167-3176

8. Warner NS, Warner MA, Schroeder DR, Sprung J, Weingarten TN: Effects of caffeine administration on sedation and respiratory parameters in patients recovering from anesthesia. Bosn J Basic Med Sci 2018; 18: 101-104

9. Lagier D, Nee L, Guieu R, Kerbaul F, Fenouillet E, Roux N, Giorgi R, Theron A, Grisoli D, Gariboldi V, Collart F, Bruder N, Velly L, Guidon C: Peri-operative oral caffeine does not prevent postoperative atrial fibrillation after heart valve surgery with cardiopulmonary bypass: A randomised controlled clinical trial. Eur J Anaesthesiol 2018; 35: 911-918

PATIENT-REPORTED EXPERIENCE MEASURES (PREM) CAN IDENTIFY AREAS FOR IMPROVEMENT

Alexander Gregory, MD, University of Calgary, Alberta, CA

>> continued from page 1

environment, information on medications/discharge, and a global hospital rating. There are also questions that may overlap with those included in common PROM tools, particularly as it pertains to pain management and sleep. Clearly, PREMs are valuable as a "customer satisfaction" tool and can provide hospitals with a metric to improve patient-perceived quality of care. But are they able to provide useful information for clinicians to also improve the quality of recovery within an ERAS program? A recently published study suggests that they can. Helder and colleagues evaluated HCAHPS survey data from 1315 cardiac surgical patients.[3] They found that although communication with doctors and nurses, pain management, and clear discharge information had generally high scores, it was the two communication metrics that had the greatest impact on the global satisfaction rating. Of the areas that tended to have lower scores, communication regarding medications and transition of care towards discharge were the two areas with the highest correlation for low global satisfaction ratings. The importance of medication compliance, value of functional recovery at home, and the medical/financial ramifications of hospital re-admission are well known. Improvements in these areas would benefit patients' actual health beyond simply raising their level of satisfaction. Patient satisfaction tools are a double-edged sword. Focusing on improving PREM scores at the expense of other clinical outcomes would potentially leave patients more satisfied, but in poorer health. Imagine if resources were taken from reducing surgical site infections to improve the comfort of the hospital environment. This strategy leaves both the patient and the healthcare system worse off, despite any improvements in their satisfaction. Fortunately, most patients do not seem to be easily distracted by superficial measures of their experience. The parameters of the HCAHPS survey that had the greatest impact on the global satisfaction rating were also those that had significant relevance to clinical outcomes. Therefore, appropriately applied and evaluated PREM tools may provide a valuable intersection of patient and provider priorities, allowing the ERAS team to seek new areas for continued improvements in perioperative care.

1. Subramanian M, Kozower BD, Brown LM, Khullar OV, Fernandez FG: Patient-Reported Outcomes in Cardiothoracic Surgery. Ann Thorac Surg 2019; 107: 294-301

2. Centers for Medicare & Medicaid Services. Quality Assurance Guidelines. CAHPS Hospital Survey (HCAHPS). Version 12.0.

3. Helder MRK, Schaff HV, Hanson KT, Thiels CA, Dearani JA, Daly RC, Maltais S, Habermann EB: Patient Experience After Cardiac Surgery: Identifying Areas for Improvement. Ann Thorac Surg 2019; 107: 780-786

THE EVIDENCE FOR TREATING ATRIAL FIBRILLATION DURING CARDIAC SURGERY

S. Chris Malaisrie, MD, Bluhm Cardiovascular Institute, Northwestern University, Northwestern Memorial Hospital, Chicago, IL

>> continued from page 1

with lower stroke/SE and mortality in patients who survived >2 years.[5] Concomitant SA of AF during CABG or valve surgeries has Class I recommendations from the STS and Heart Rhythm Society.[1,4] However, estimated rates of concomitant SA for AF are low, with less than one-third of cardiac surgery patients with AF treated.[3] The highest estimate based on a STS database analysis found only 48.3% of cardiac surgery patients with documented AF received concomitant SA.[6] Based on Medicare claims data, only 22% of cardiac surgery patients with AF received concomitant SA .[7]

Patients may be both underdiagnosed and undertreated for AF due to lack of screening. Therefore it is increasingly important that patients referred for cardiac surgery undergo AF screening. Chart review for past AF diagnosis, Holter monitoring, cardioversion, or catheter ablation should be included during surgical intake. Adequately screening every cardiac surgery patient for AF and treating appropriately with concomitant SA may give these patients the highest chance of restoring normal sinus rhythm as well as better peri-operative and long-term clinical outcomes based on available data.

1. Calkins H, Hindricks G, Cappato R, Kim YH, Saad EB, Aguinaga L, et al. 2017 hrs/ehra/ecas/aphrs/solaece expert consensus statement on catheter and surgical ablation of atrial fibrillation. Europace. 2018;20:e1-e160

2. Malaisrie SC, McCarthy PM, Kruse J, Matsouaka R, Andrei A-C, Grau-Sepulveda MV, et al. Burden of preoperative atrial fibrillation in patients undergoing coronary artery bypass grafting. The Journal of Thoracic and Cardiovascular Surgery. 2018;155:2358-2367.e2351

3. McCarthy PM, Cox JL, Kislitsina ON, Kruse J, Churyla A, Malaisrie SC, et al. Surgery and catheter ablation for atrial fibrillation: History, current practice, and future directions. J Clin Med. 2021;11

4. Badhwar V, Rankin JS, Damiano RJ, Jr., Gillinov AM, Bakaeen FG, Edgerton JR, et al. The society of thoracic surgeons 2017 clinical practice guidelines for the surgical treatment of atrial fibrillation. Ann Thorac Surg. 2017;103:329-341

5. Malaisrie SC, McCarthy PM, Kruse J, Matsouaka RA, Churyla A, Grau-Sepulveda MV, et al. Ablation of atrial fibrillation during coronary artery bypass grafting: Late outcomes in a medicare population. J Thorac Cardiovasc Surg. 2021;161:1251-1261 e1251

6. Badhwar V, Rankin JS, Ad N, Grau-Sepulveda M, Damiano RJ, Gillinov AM, et al. Surgical ablation of atrial fibrillation in the united states: Trends and propensity matched outcomes. Ann Thorac Surg. 2017;104:493-500

7. McCarthy PM, Davidson CJ, Kruse J, Lerner DJ, Braid-Forbes MJ, McCrea MM, et al. Prevalence of atrial fibrillation before cardiac surgery and factors associated with concomitant ablation. J Thorac Cardiovasc Surg. 2020;159:2245-2253 e2215

POST INTENSIVE CARE SYNDROME

Amanda Rea, CRNP Sarah Holler, RN, University of Maryland St Joseph Medical Center

>> continued from page 1

care hospitalization will experience Post Intensive Care Syndrome (PICS). PICS is a new or worsening impairment of cognitive, physical, and/or psychological function after a critical illness, which can include the development of post-traumatic stress disorder (PTSD). These physical impairments affect 25-80% of patients and can last for five years, while cognitive defects can last for more than eight years in up to 62% of patients [1]. Several risk factors are shared for PICS and cardiac surgery patients, including age > 65, male, smoking history, diabetes, hypertension, and coronary artery disease [1,2]. Many cardiac surgery patients also utilize medications throughout the perioperative process that have been associated with an increased risk of PICS, including benzodiazepines, sedatives, paralytics, and analgesics[2].

Treatment for PICS is limited, and the focus is heavily on prevention. Cognitive, physical, and occupational therapy have proven to reduce symptoms. Inpatient opportunities include increasing out of bed activity, reorientation strategies, minimizing sedation, continuing home psychiatric medications, avoiding hyperglycemia, steroids, and neuromuscular blocking drugs [1, 3]. These opportunities and others listed in the ABCDEF Bundle (Figure 1) have been shown to reduce the incidence of PICS and are widely accepted in ICU care for prevention. Journaling and support groups promote recovery in patients upon return to their normal setting. Many of the recommendations of Cardiac Enhanced Recovery After Surgery (ERAS) align with the preventative care for PICS (Figure 1). Recommendations from both Cardiac ERAS and PICS include complementary elements of a multidisciplinary approach for the cardiac surgery patient resulting in enhanced outcomes.

1. Posa P, Singh J, Stollings J, eds. ICU Liberation. 2nd ed. Society of Critical Care Medicine; 2020

2. Wang S, Allen D, Perkins A, Monahan P, Khan S, Lasiter S, Boustani M, & Khan B. Validation of a new clinical tool for post-intensive care syndrome. American Journal of Critical Care, 2019;28(1):10-18. doi: https://doi.org/10.4037/ajcc2019639

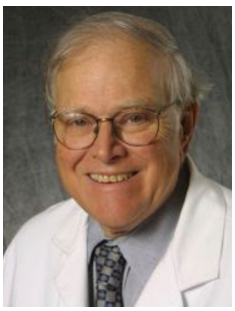
3. Brown SM, Bose S, Banner-Goodspeed V, et al. Approaches to Addressing Post–Intensive Care Syndrome among Intensive Care Unit Survivors: A Narrative Review. Annals of the American Thoracic Society. 2019;16(8): 947–956. https://doi.org/10.1513/annalsats.201812-913fr.

Figure 1

IN THE NEWS:

Sameer Hirji, MD is the recipient of the inaugural Richard Engelman Cardiac Enhanced Recovery Fellowship Award.

Announcing the First Annual ERAS Cardiac Fellowship Awardee:



Dr. Richard Engelman

Sameer Hirji, MD is the recipient of the inaugural Richard Engelman Cardiac Enhanced Recovery Fellowship Award. This award affords the recipient the opportunity to join the ERAS Cardiac Executive Board in focused research, collaboration, and presentations at academic meetings. The intent is to provide an enriched experience for the awardee to gain advanced training in perioperative care of cardiac surgical patients. Awardees may also travel to expert institutions for advanced training.

Dr. Hirji is a Cardiac Surgery Resident in the joint 4/3 cardiothoracic and general surgery program at Brigham and Women's Hospital, Harvard Medical School. He previously completed his undergraduate degree in biological engineering at the Massachusetts Institute of Technology followed by graduation from Duke University School of Medicine. He also has a Master's in Public Health from T.H. Chan Harvard School of Public Health. Dr. Hirji is a clinician-scientist with a proven record of publishing in major academic journals, including JAMA, JACC, Circulation, and EHJ. He has over 220 peer-reviewed manuscripts and book chapters with a focus on surgical and transcatheter aortic valve therapies, standardizing cardiac clinical outcomes, as well as identifying new avenues for research in the context of enhanced recovery after cardiac surgery. Dr. Hirji's work has been recognized at the STS and AATS with several awards, including the J. Maxwell Chamberlain award, Richard Clark Memorial Award, and C. Walton Lillehei Award.

ERAS International World Congress:

Members of the the ERAS Cardiac Society hosted a dedicated Cardiac Surgery plenary session during the 8th ERAS International World Congress in Madrid this June. The meeting was well-attended by cardiac surgical providers and fostered discussion of best perioperative practice from an international group of experts.

Free Webinar:

The ERAS Cardic Society and CTSNet hosted a free webinar entitled "Controversies in Enhanced Recovery After Cardiac Surgery" this spring. The three debates were: Regional Anesthetics for Sternotomies: To Block or Not to Block?, Preoperative Epogen: Hero or Hype?, and Rigid Sternal Fixation: For Every Patient or Selective Patients? Over 600 people from 50 different countries participated. Debates were followed by questions and interactive discussion. ERAS Cardiac plans to do similar collaborative webinars in the future.

Annual Meeting of the AATS:

The ERAS Cardiac Society held the first dedicated ERAS Cardiac Sessions at the 102nd Annual Meeting of the AATS in Boston this May. Topics presented included ERAS implementation, team building, prehabilitation, rigid sternal fixation, acute kidney injury, and AI-goal directed therapy.

DANIEL ENGELMAN MD named senior perioperative Editor for the Annals of Thoracic surgery:

DANIEL ENGELMAN MD Professor of Surgery, Medical Director of the Heart and Vascular Critical Care Unit and Inpatient Services at University of Massachusettss Medical School – Baystate, and President of the ERAS Cardiac Society, has been named senior perioperative Editor for the Annals of Thoracic surgery.

RECENT ERAS® CARDIAC PUBLICATIONS:

>> Click titles for weblinks

Grant MC, Engelman DT. ***The journey to standardizing cardiac perioperative care.*** ***Anaesthesia Critical Care & Pain Medicine***. 41;3:2022.

Shaw AD, Guinn NR, Brown JK, Arora RC, Lobdell KW, Grant MC, Gan TJ, Engelman DT; ***Perioperative Quality Initiative (POQI) and Enhanced Recovery after Surgery–Cardiac (ERAS -Cardiac) investigators. Controversies in enhanced recovery after cardiac surgery***. ***Perioper Med (Lond).*** 2022 Apr 28;11(1):19.

Engelman DT, Crisafi C, Hodle T, Stiles J, Nathanson BH, Zarbock A, Grant MC. ***Situational Awareness of Opioid Consumption: The Missing Link to Reducing Dependence After Surgery?*** ***Anesth Analg.*** 2022 Sep 1;135(3):653-658.

Guinn NR, Schwartz J, Arora RC, Morton-Bailey V, Aronson S, Brudney CS, Bennett-Guerrero E; ***Perioperative Quality Initiative (POQI-8) and the Enhanced Recovery After Surgery-Cardiac Society (ERAS-C) Investigators.*** ***Perioperative Quality Initiative and Enhanced Recovery After Surgery-Cardiac Society Consensus Statement on the Management of Preoperative Anemia and Iron Deficiency in Adult Cardiac Surgery Patients.***

Bills S, Wills B, Boyd S, Elbeery J. ***Impact of an Enhanced Recovery after Surgery Protocol on Postoperative Outcomes in Cardiac Surgery. J Pharm Pract.*** 2022 Aug 13:8971900221119013. doi: 10.1177/08971900221119013. Epub ahead of print.

Sofjan IP, McCutchan A. ***Anesthetic Management For Enhanced Recovery After Cardiac Surgery (ERACS). 2022 Jun 11. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing;*** 2022 Jan.

Salenger R, Holmes SD, Rea A, Yeh J, Knott K, Born R, Boss MJ, Barr LF. ***Cardiac Enhanced Recovery After Surgery: Early Outcomes in a Community Setting.*** ***Ann Thorac Surg.*** 2022 Jun;113(6):2008-2017.

Yazdchi F, Hirji S, Harloff M, McGurk S, Morth K, Zammert M, Shook D, Varelmann D, Shekar P, Kaneko T; ERAS Working Group, Bedeir K, Madou ID, Choi J, Percy E, Kiehm S, Woo S, Bentain-Melanson M, Swanson J, Rawn J, Rinewalt D, Mallidi HR, Sabe A, Aranki S. ***Enhanced Recovery After Cardiac Surgery: A Propensity-Matched Analysis.*** ***Semin Thorac Cardiovasc Surg.*** 2022 Summer;34(2):585-594.

Grant MC, Gregory AJ, Ouanes JP. ***Regional analgesia for cardiac surgery.*** ***Curr Opin Anaesthesiol.*** 2022 Jul 28..

UPCOMING MEETINGS:

>> Click on icons for weblinks

September 8-10 STS Critical Care (Society of Thoracic Surgeons) *Denver*

September 27-29 EBPOM Dingle *Ireland*

October 5-8 EACTS (European Association for Cardio-Thoracic Surgery) *Milan*

October 22-26 ASA (American Society of Anesthesiologists) *New Orleans*

MORE ONLINE:

To learn more about our organization, including our board members and upcoming meetings:
www.erascardiac.org

ERAS© Cardiac Society MISSION

Our mission is to optimize perioperative care of cardiac surgical patients through collaborative discovery, analysis, expert consensus, and dissemination of best practices worldwide.

Who We Are

ERAS® stands for Enhanced Recovery after Surgery, and we improve surgical care and recovery through research, education, audit, and implementation of evidence-based practices. In early 2017, a group of cardiac surgeons, anesthesiologists, and intensivists first met to establish the Enhanced Recovery After Cardiac Surgery (ERACS®) Society to achieve these goals for patients undergoing heart surgery. This initial organization's work led to the publication of the first-ever expert consensus recommendations for a cardiac surgical enhanced recovery protocol. We have since joined with the ERAS® Society and have established an organization of multinational experts representing all aspects of healthcare delivery. ERAS® Cardiac is a non-profit organization with the mission to develop evidence-based expert consensus statements promoting best practice recovery practices. The goal is to provide hospitals with better guidance for developing local protocols that are part of a continuous quality improvement process for better patient care, and reduce postoperative complications and costs after heart surgery.

ERAS® Society

The ERAS® Society is an international organization with enhanced recovery guidelines for several surgical sub-specialties. Beginning as the ERAS® Study Group in 2001, team leaders Professor Ken Fearon (University of Edinburgh) and Professor Olle Ljungqvist (Karolinska Insitutet) spearheaded the developments made in multimodal surgical care. The ERAS® Study Group soon discovered that there were a variety of local traditions in practice, as well as an inconsistent application of evidence-based best practices. This prompted the group to examine the process of change from tradition to best-practice. Since its inception, the ERAS® Society has expanded to include several subspecialties, emphasized the benefits of standardized best-practices across the continuum of the perioperative period, highlighted the importance of data-driven self-evaluation, and promoted the improvement of patient care.

Our Organizational Structure

Our ERAS® Cardiac Society is made up of experts from around the world, including participation from all members of the healthcare team. Our members strive to implement enhanced recovery principals at their local institutions while advancing improved patient care internationally through collaboration, education, and dissemination of up-to-date knowledge regarding optimal perioperative care. Our organization is divided into an Executive Board, Advisory Board, and a pool of Subject Matter Experts.

Terri Haber, MPH
Executive Director,
ERAS® Cardiac Society
t.haber@erascardiac.org

Donna Frankel
Office Manager
ERAS® Cardiac Society
donnaerasc@gmail.com

To learn more about our organization, including our board members and upcoming meetings:
www.erascardiac.org

ERAS© Cardiac Society SPONSORS

Abbott

ABIOMED

AtriCure

Baxter

Edwards

CORCYM
WE TAKE LIFE TO HEART

medela

TERUMO
CARDIOVASCULAR

3M KCI

Trevena

PACIRA
PHARMACEUTICALS, INC.

BIOMÉRIEUX

CLEARFLOW

nuwellis
Restoring Fluid Balance. Transforming Care.

DePuy Synthes
THE ORTHOPAEDICS COMPANY OF Johnson & Johnson

HEMOSONICS
A Stago Group Company

KLS martin
GROUP

MEDISTIM

ZIMMER BIOMET

stryker

Corporate financial support will be used to promote the mission of the ERAS® Cardiac Society. We are committed to standardizing best practice surrounding the preoperative and perioperative care of cardiac surgical patients through expert consensus, review of the literature and open communication. This unrestricted support does not represent the ERAS® Cardiac Society's support or agreement to promote any pharmaceutical, device, or technology related to the sponsors.

For more information and to become a sponsor please contact: Executive Director Terri Haber, MPH, at t.haber@erascardiac.org

EXECUTIVE BOARD

Cheryl Crisafi MSN, RN, CNL
Nurse Coordinator ERAS® Cardiac Society

Daniel Engelman, MD
President, Cardiac Surgeon
Baystate Medical Center, Springfield MA, USA

Michael Grant, MD
Vice President
Cardiac Anesthesia and Critical Care Medicine
Johns Hopkins, Baltimore, MD, USA

Alex Gregory, MD
Secretary, Cardiac Anesthesia
University of Calgary, Canada

Kevin Lobdell, MD
Treasurer
Cardiac Surgeon
Atrium Health, North Carolina, USA

Rakesh Arora, MD, PhD
Cardiac Surgeon
University of Manitoba, Winnipeg, Canada

V. Seenu Reddy, MD, MBA, FACS
Cardiac Surgeon
Centennial Heart & Vascular Center,
Nashville, TN, USA

Marjan Jahangiri, MBBS, MS, FRCS, FRCS (CTh)
Cardiac Surgeon
St. Georges University of London

Rawn Salenger, MD
Cardiac Surgeon
University of Maryland, Baltimore, MD, USA

Subhasis Chatterjee, MD
Cardiac SurgeonBaylor College of Medicine,
Houston, TX USA

Vicki Morton-Bailey, DNP, MSN, AGNP-BC
Director of Clinical and Quality Outcomes
Providence Anesthesiology Associates
Charlotte, North Carolina, USA

ADVISORY BOARD

Ed Boyle, MD
Cardiac Surgeon
St. Charles Medical Center, Bend Oregon, USA

Albert Cheung, MD
Cardiac Anesthesia
Stanford University Medical Center,
Stanford, CA, USA

Joerg Ender, MD
Cardiac Anesthesia
University of Leipzig, Leipzig, Germany

Richard Engelman, MD
Cardiac Surgeon
Baystate Medical Center, Springfield, MA, USA

Marc W. Gerdisch, MD
Cardiac Surgeon
Franciscan Health Heart Center,
Indianapolis, IN, USA

Karim Jabr, CCP, LP, CSSBB
Cardiovascular Perfusion
Navicent Health Medical Center
Macon, GA, USA

Ali Khoynezhad, MD
Cardiac Surgeon
Long Beach Memorial Heart & Vascular Institute,
Long Beach, CA, USA

Yoan Lamarche, MD
Cardiac Surgeon Intensivist
Montreal Heart Institute

Jerrold H Levy, MD, FAHA, FCCM
Cardiac Anesthesia
Duke University Medical Center
Durham, North Carolina, USA

Louis Perrault, MD
Cardiac Surgeon
Montreal Heart Institute,
Montreal, Quebec, Canada

John Pirris, MD
Cardiac Surgeon
University of Florida Health, Gainesville, FL USA

Eric Roselli, MD
Cardiac Surgeon
Cleveland Clinic, Cleveland, OH, USA

Judson Williams, MD, MHS
Cardiac Surgeon
WakeMed Heart & Vascular
Raleigh, North Carolina, USA

Alex Zarbock
Cardiac Anesthesia
University of Munster, Munster, Germany

Mary Zellinger, : APRN-CCNS, MN, ANP-BC,
CCRN-CSC, FCCM, FAAN
Critical Care Nursing
Emory University Hospital
Atlanta, Georgia, USA

SUBJECT MATTER EXPERTS

Keith Allen, MD
Cardiac Surgeon
Mid America Heart and Lung Surgeons Kansas
City, MO, USA

Ramon Arreola-Torres
Cardiac Surgeon
West National Medical Center, Mexico

John Augoustides, MD
Cardiac Surgeon
Penn Medicine Clinical Care,
Philadelphia, PA, USA

Daniel Beckles, MD
Cardiac Surgeon
Baylor, Scott, and White Health, Temple, TX USA

Walid Ben Ali, MD
Cardiac Surgeon
Montreal Heart, Montreal, Quebec, Canada

Jack H. Boyd, MD
Cardiac Surgeon
Stanford University School of Medicine

Jessica Brown, MD
Cardiac Anesthesia
Southern Methodist, Houston, TX, USA

Andre Denault, MD
Cardiac Anesthesia
Montreal Heart, Montreal Quebec, Canada

Jill Engel, RN
Cardiac Nursing
Duke University Medical Center
Durham, North Carolina, USA

Nick Fletcher, MBBS, FRCA, FFICM
Cardiac Anesthesia
St. Georges University of London
London SW17 ORE, UK

Bram Geller, MD
Critical Care, Cardiology
Penn Medicine Clinical Care
Philadelphia, PA, USA

Kamrouz Ghadimi, MD
Cardiac Anesthesia
Duke University School of Medicine
Durham, North Carolina, USA

Leah Gramlich, MD
Physician Nutrition Specialist Gastroenteroslogist
University of Alberta

Hilary P. Grocott, MD, FRCPC, FASE
Cardiac Anesthesia
University of Manitoba, Winnipeg, Canada

Jacob T Gutsche, MD, FASE, FCCM
Cardiovascular Critical Care
University of Pennsylvania
Philadelphia, PA, USA

Matthias Kirsch, MD
Cardiac Surgeon
Centre Hospitalo Universitaire Vaudois
Lausanne, Switzerland

Gudrun Kunst, MD PhD, FRCA, FFICM
Cardiac Anesthesia
King's College Hospital, Denmark Hill, UK

Claude Laflamme, MD
Cardiac Anesthesia
Sunnybrook HSC, Toronto

Michael Manning, MD, PhD
Cardiac Anesthesia
Duke University, Durham, NC, USA

Alison Nelson, RN
ERAS Provincial Manager
Alberta Health Services, Alberta CA

Gregg Nelson, MD, PhD
Secretary of the ERAS® Society
University of Calgary
Calgary, Alberta, Canada

Tom Nguyen, MD
Cardiac Anesthesia
Memorial Hermann Texas Medical Center,
Houston, TX, USA

Prakash A. Patel, MD, FASE
Cardiac Anesthesia
University of Pennsylvania
Philadelphia, PA, USA

Nathalie Roy, MD, FRCSC
Cardiac Surgeon
Boston Children's Hospital, Boston, MA, USA

Michael Sander, MD
Cardiac Anesthesia
University of Giessen und Marburg, Germany

Andrew Shaw, MD
Cardiac Anesthesia
University of Alberta, Alberta, CA

Christian Stoppe, MD
Cardiac Anesthesia
Aachen University, Aachen, Germany

Vinod Thourani, MD
Cardiac Surgeron
Piedmont Heart Institute, Atlanta, GA USA

Keenan Yount, MD
Cardiac Surgeon
University Virginia, Charlottesville, VA, USA