

## PRESENTATIONS

### Dedicated ERAS/Perioperative sessions at AATS

#### Enhanced Recovery After Surgery (ERAS®) Sessions to be Held at the AATS 99th Annual Meeting

For the second year in a row, dedicated ERAS® Cardiac and Thoracic Surgery sessions will be held at the American Association for Thoracic Surgery 99th Annual meeting on May 4-7 in Toronto, Canada.

There will be eight sessions dedicated to ERAS/perioperative medicine. These will include presentations by the lead author of the ERAS® Society Thoracic Guidelines, Dr. Tim Batchelor, Department of Thoracic Surgery, University Hospitals Bristol NHS Foundation Trust, Bristol, UK; as well as the ERAS® Cardiac Guidelines by Dr. Daniel Engelman, University of Massachusetts-Baystate, Springfield, MA, USA. The sessions will include 17 selected high-quality peer-reviewed abstracts and separate sessions dedicated to preoperative, intraoperative,

and postoperative interventions to optimize the care of both cardiac and thoracic surgical patients.

Some of the standardized approaches discussed will include: prehabilitation to help more fragile patients prepare for surgery; pathways to better manage glucose, fluids; promotion of early extubation; new techniques for rigid fixation of the sternum; active clearance methods for chest tubes to prevent retained blood syndrome; use of biomarkers to prevent acute kidney injury; goal directed fluid therapy; and novel approaches to reduce postoperative delirium. There will also be a session dedicated to best-practice approaches to addressing the opioid crisis for cardiothoracic surgeons and their multidisciplinary teams. Another session will summarize "The Year in Review: The Very Best of the CT Perioperative Publications." A final session will look at what to do when a

patient "falls off the ERAS pathway," exploring complex critical care interventions and controversies in the specialty.

The ERAS/Perioperative planning committee, which includes Drs. Glenn Whitman (Johns Hopkins), Daniel Engelman (University of Massachusetts-Baystate), Blair Marshall (Georgetown University), Jennifer Lawton (Johns Hopkins), Rakesh C. Arora (University of Manitoba) and Robin Varghese (Mount Sinai, NY), invited select members of the multidisciplinary cardiac care teams to present during these sessions.

"We believe this is an important step toward closer collaboration and standardization of best practice among our anesthesia, critical care, perfusion, pharmacy, nursing and advanced practitioner partners," said Dr. Engelman, President of ERAS® Cardiac.

## PUBLISHED

### FIRST ERAS®-CARDIAC STUDY PUBLISHED

ERAS® Cardiac Society is proud to announce that the one-year results from the first US-based ERAS Cardiac program have been published in the The Journal of Thoracic and Cardiovascular Surgery. The study reports on systematic application of enhanced

recovery principals to a US cardiac surgery program with reduced opioid use and LOS, and improved patient and staff satisfaction.

The full manuscript can be read at: [www.jtcvs.org](http://www.jtcvs.org)

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## MORE INSIDE

- **Nutrition:** Nutrition Support in Cardiac Surgery Patients
- **Delirium:** Management of post cardiac delirium may be advantageous
- **Vaping:** Should vaping be included in prehabilitation efforts?
- **Abstract:** The Journal of Thoracic and Cardiovascular Surgery
- Presentation Calendar
- Get Involved

## IN THE NEWS

MORE NEWS AT [ERASCARDIAC.ORG](http://ERASCARDIAC.ORG)

January 7, 2019

ERAS® Member Publishes Results of First US-based Program

December 21, 2018

ERAS® Cardiac Society Welcomes Two New Executive Board Members.

October 25, 2018

ERAS® Cardiac Society Featured at Dedicated Session at European Association for Cardio-Thoracic Surgery in Milan

## NUTRITION:

## NUTRITION SUPPORT IN CARDIAC SURGERY PATIENTS

Christian Stoppe, MD, Aachen University, Aachen Germany

While considerable evidence supports the rationale of optimal nutrition in the general intensive care unit (ICU) patient population, relatively little is known specifically

regarding the role of perioperative nutrition support in cardiac surgery patients. A preoperative assessment of nutritional risk may identify patients at near-critical levels of malnutrition, who will benefit from nutritional optimization prior to surgery. Notably, well-nourished patients show better outcomes and lower postoperative mortality after cardiac surgery. The issue of insufficient postoperative nutrition is of particular relevance for patients who experience a prolonged ICU stay. Previous studies have estimated that cardiac surgery patients routinely receive only 20-30% of goal nutritional needs. These patients can remain functionally impaired for years and one factor contributing to this post-ICU disability is loss of lean body mass. There is an urgent need to systematically identify malnourished patients, and thus enable early initiation of aggressive nutritional therapy to prevent worsening of malnutrition and facilitate an enhanced recovery. High risk patients may benefit from combined enteral, parenteral nutrition, and ICU-based rehabilitation strategies, which will be investigated in the international

### HIGH RISK PATIENTS MAY BENEFIT FROM COMBINED ENTERAL, PARENTERAL NUTRITION, AND ICU-BASED REHABILITATION STRATEGIES.

regarding the role of perioperative nutrition support in cardiac surgery patients. A preoperative assessment of nutritional risk may identify patients at near-critical levels of malnutrition, who will benefit from nutritional optimization prior to surgery. Notably, well-nourished patients show better outcomes and lower postoperative mortality after cardiac surgery. The issue of insufficient postoperative nutrition is of particular relevance for patients who experience a prolonged ICU stay. Previous studies have estimated that cardiac surgery patients routinely receive only 20-30% of goal nutritional needs. These patients can remain functionally impaired for years and one factor contributing to this post-ICU disability is loss of lean body mass. There is an urgent need to systematically identify malnourished patients, and thus enable early initiation of aggressive nutritional therapy to prevent worsening of malnutrition and facilitate an enhanced recovery.

CSX study<sup>12</sup>. There is also ongoing investigation of the potential to attenuate the post-operative inflammatory response with the use of immune-modulating pharmaconutrients. Internationally, ERAS Cardiac programs for optimal perioperative care are studying specific pre- and postoperative nutritional strategies for cardiac surgery patients.

1. Preiser J-C, van Zanten ARH, Berger MM, et al. Metabolic and nutritional support of critically ill patients: consensus and controversies. *Crit Care*. 2015;19(1):35. doi:10.1186/s13054-015-0737-8.
2. Chermesh I, Hajos J, Mashlach T, et al. Malnutrition in cardiac surgery: food for thought. *Eur J Prev Cardiol*. 2014;21(4):475-483. doi:10.1177/2047487312452969.
3. Sanchez JA, Sanchez LL, Dudrick SJ. Nutritional considerations in adult cardiothoracic surgical patients. *Surg Clin North Am*. 2011;91(4):857-75-ix. doi:10.1016/j.suc.2011.06.001.
4. Stoppe C, Goetzenich A, Whitman G, et al. Role of nutrition support in adult cardiac surgery: a consensus statement from an International Multidisciplinary Expert Group on Nutrition in Cardiac Surgery. *Crit Care*. 2017;21(1):131. doi:10.1186/s13054-017-1690-5.

5. Hill A, Nesterova E, Lomivorotov V, et al. Current Evidence about Nutrition Support in Cardiac Surgery Patients-What Do We Know? *Nutrients*. 2018;10(5):597. doi:10.3390/nu10050597.

6. Chatterjee S, Shake JG, Arora RC, et al. Handoffs from the Operating Room to the Intensive Care Unit after Cardiothoracic Surgery: From the Society of Thoracic Surgeons Workforce on Critical Care. *Ann Thorac Surg*. November 2018. doi:10.1016/j.athoracsur.2018.11.010.

7. Rahman A, Hasan RM, Agarwala R, Martin C, Day AG, Heyland DK. Identifying critically-ill patients who will benefit most from nutritional therapy: Further validation of the "modified NUTRIC" nutritional risk assessment tool. *Clin Nutr*. 2016;35(1):158-162. doi:10.1016/j.clnu.2015.01.015.

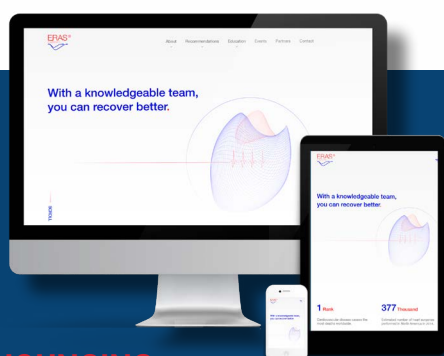
8. Stoppe C, Ney J, Lomivorotov VV, et al. Prediction of Prolonged ICU Stay in Cardiac Surgery Patients as a Useful Method to Identify Nutrition Risk in Cardiac Surgery Patients: A Post Hoc Analysis of a Prospective Observational Study. *JPEN J Parenter Enteral Nutr*. 2018;18(11-12):971. doi:10.1002/jpen.1486.

9. Wei X, Day AG, Ouellette-Kuntz H, Heyland DK. The Association Between Nutritional Adequacy and Long-Term Outcomes in Critically Ill Patients Requiring Prolonged Mechanical Ventilation: A Multicenter Cohort Study. *Crit Care Med*. 2015;43(8):1569-1579. doi:10.1097/CCM.0000000000001000.

10. Heidegger CP, Berger MM, Graf S, et al. Optimisation of energy provision with supplemental parenteral nutrition in critically ill patients: a randomised controlled clinical trial. *Lancet*. 2013;381(9864):385-393. doi:10.1016/S0140-6736(12)61351-8.

11. Wischmeyer PE, Hasselmann M, Kummerlen C, et al. A randomized trial of supplemental parenteral nutrition in underweight and overweight critically ill patients: the TOP-UP pilot trial. *Crit Care*. 2017;21(1):142. doi:10.1186/s13054-017-1736-8.

12. <https://www.ukaachen.de/en/clinics-institutes/3care/research.html>



## ANNOUNCING NEW WEB TOOL

We've added a "How To" section our new website. Visit us at [ERAScardiac.org](http://ERAScardiac.org)

### COVER STORY Heart to Heart

Dr. Judson Williams and his ERAS Team on the cover of *Heart to Heart* magazine.

Programs can email us their team photo and a brief description of their ERAS work to be published in future newsletters.



**DELIRIUM:****DELIRIUM AFTER CARDIAC SURGERY**

*Rawn Salenger, MD, University of Maryland, Baltimore*

Contemporary reports suggest between 20-50% of post-cardiac surgery patients experience delirium<sup>1-4</sup>. The variability is due partially to different delirium screening tools being applied with varying degrees of rigor. However, delirium is being increasingly recognized as a significant problem post-cardiac surgery. Patients with delirium are at risk for increased ICU stay, prolonged ventilation, increased major morbidity, mortality, and long term cognitive impairment<sup>1-6</sup>.

The pathophysiology of post-cardiac surgery delirium is incompletely understood but believed to be multifactorial. There are numerous associated patient characteristics which predispose to delirium including frailty, older age, atrial fibrillation, diabetes, extra-cardiac arterial disease, hearing impairment, and pre-existing cognitive impairment. Associated perioperative stressors include combined CAB/valve cases, longer duration cases, rising creatinine, re-intubation, post-operative pain, higher doses of opioids and benzodiazepines<sup>1,4,5</sup>.

Although treatment strategies are limited, data has emerged regarding the management and potential avoidance of post cardiac surgery delirium. One recent trial, the DEXACET Study, randomized 120 post-cardiac surgery patients to receive either routine intravenous acetaminophen or placebo, each in combination with propofol or dexmedetomidine<sup>7</sup>. The primary outcome, postoperative delirium, occurred in 46% of placebo patients versus only 24% of IV acetaminophen patients. This difference was statistically and clinically significant. Notably, there was no difference in delirium with the adjunctive use of dexmedetomidine versus propofol, although the dexmedetomidine patients had less analgesic breakthrough. The acetaminophen patients received less opioids, and this was likely one significant reason for the decreased incidence of delirium<sup>7</sup>. While the results of this study await confirmation in larger trials, these data suggest that cardiac ERAS programs, which aim to reduce opioid consumption, may also achieve lower rates of delirium for their patients.

1. Sanson G, Khlopenyuk Y, Milocco S, Sartori M, Dreas L, Fabiani A. Delirium after cardiac surgery. Incidence, phenotypes, predisposing and precipitating risk factors, and effects. *Heart and Lung*. 2018;47:408-17.

2. Bergeron N, Dubois MJ, Dumont M, Dial S, Skrobik Y. Intensive Care Delirium Screening Checklist: evaluation of a new screening tool. *Intensive care medicine*. 2001;27:859-864.

3. Ely EW, Margolin R, Francis J, et al. Evaluation of delirium in critically ill patients: validation of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). *Critical care medicine*. 2001;29:1370-1379.

4. Rudolph JL, Jones RN, Grande LJ, Milberg WP, King EG, Lipsitz LA, et al. Impaired executive function is associated with delirium after coronary artery bypass graft surgery. *Journal of the American Geriatrics Society*. 2006;54(6):937-41.

5. Koster S, Hensens AG, van der Palen J. The long-term cognitive and functional outcomes of postoperative delirium after cardiac surgery. *Ann Thorac Surg*. 2009;87(5):1469-74.

6. van Exel E, Gussekloo J, Houx P, de Craen AJ, Macfarlane PW, Bootsma-van der Wiel A, et al. Atherosclerosis and cognitive impairment are linked in the elderly. The Leiden 85-plus Study. *Atherosclerosis*. 2002;165(2):353-9.

7. Subramaniam B, Shankar P, Shaefi S, Mueller A, O'Gara B, Banner-Goodspeed V, Gallagher J, Gasangwa D, Patxot M, Packiasabapathy S, Mathur P, Eikermann M, Talmor D, Marcantonio ER. Effect of Intravenous Acetaminophen vs Placebo Combined With Propofol or Dexmedetomidine on Postoperative Delirium Among Older Patients Following Cardiac Surgery: The DEXACET Randomized Clinical Trial. *JAMA*. 2019;321(7):686-96.

**VAPING:****SHOULD VAPING BE INCLUDED IN PREHABILITATION EFFORTS?**

*by Mary Kate Bryant, MD and Judson B. Williams MD, MHS Raleigh, NC, WakeMed Heart and Vascular, Raleigh, NC*

Traditional cigarette smoking is a known risk factor for postoperative complications with preoperative abstinence reducing this risk. Smoking cessation is one important component of preoperative optimization and implementation research of enhanced recovery protocols in non-cardiac surgical specialties (hepatobiliary and pancreatic) have shown smoking as a risk factor for failure.<sup>(1)</sup>

Historically, it was enough to categorize smoking history by current, former, or never smoker and by pack years. Now, with the surge in E-cigarette use, known as vaping, over the past decade, categorizing smoking by the type of nicotine vector is crucial to researching and understanding the specific effects of E-cigarettes on health outcomes. The danger of E-cigarettes lies in the shared

components with traditional cigarettes: nicotine and aerosolized chemicals. Limited evidence suggests E-cigarettes may produce similar physiologic changes as traditional cigarettes, leading to significant deleterious health effects.

With 1 in 20 Americans now using E-cigarettes, we are seeing these users as patients in our clinics and in the operating room. While vaping has not been specifically studied in cardiac surgery, data is beginning to emerge on the cardiac effects of E-cigarettes. A recent study from the University of Kansas found e-cigarette users were 56 percent more likely to have a heart attack, 30 percent more likely to suffer a stroke, and 10 percent more likely to have coronary artery disease compared to non-smokers.<sup>(2)</sup>

As the vaping epidemic has developed quickly over the past decade, most electronic

medical records have lagged behind in accurate capture of vaping status. Many nurses and providers are not targeting these habits. ERAS-based prehabilitation should target cessation of all smoking, including vaping, prior to surgery. It may not be enough just to ask a patient if they "smoke". As research develops on the long-term effects of vaping, vaping status should be addressed preoperatively and this should be included in protocolled recommendations for cessation of all nicotine and inhaled products, including vaping, prior to surgery.

1. Lee A, Chiu CH, Cho MWA, et al. Factors associated with failure of enhanced recovery protocol in patients undergoing major hepatobiliary and pancreatic surgery: a retrospective cohort study. *BMJ Open* 2014

2. Vindhyal M, Ndunda P, Cyrus Munguti, Okut H, et al. Impact on Cardiovascular Outcomes Among E-cigarette Users: A Review from National Health Interview Surveys Abstract presented at: American College of Cardiology's 68th Annual Scientific Session; March 2019; New Orleans, LA.



## ABSTRACT

*The Journal of Thoracic and Cardiovascular Surgery May 2019*

# ONE-YEAR RESULTS FROM THE FIRST US-BASED ENHANCED RECOVERY AFTER CARDIAC SURGERY (ERAS® CARDIAC) PROGRAM

Judson B. Williams, MD, MHS,<sup>a,b</sup> Gina McConnell, RN,<sup>a</sup> J. Erin Allender, PharmD,<sup>a</sup> Patricia Woltz, PhD, RN,<sup>a</sup> Kathy Kane, MS, RN,<sup>a</sup> Peter K. Smith, MD,<sup>b</sup> Daniel T. Engelman, MD,<sup>c</sup> and William T. Bradford, MD<sup>a</sup>

**Objective:** Our enhanced recovery after cardiac surgery (ERAS® Cardiac) program is an evidence-based interdisciplinary process, which has not previously been systematically applied to cardiac surgery in the United States.

**Methods:** The Knowledge-to-Action Framework synthesized evidence-based enhanced recovery interventions and implementation of a designated ERAS®

were reduced by 1.2% and 1.5%, respectively (P = .14 not significant). The incidence of hyperglycemic episodes was no different after ERAS® Cardiac initiation. Patient satisfaction was 86.3% pre-ERAS versus 91.8% post-ERAS® Cardiac implementation and work culture domain scores revealed increases in satisfaction across all measured indices, including patient focus, culture, and engagement.

**This article represents the first US published results of a ERAS® Cardiac program. The full manuscript can be read at: [www.jtcvs.org](http://www.jtcvs.org)**

## INITIAL CLINICAL AND SURVEY DATA AFTER THE FIRST YEAR OF A SYSTEM-WIDE ERAS CARDIAC PROGRAM WERE ASSOCIATED WITH SIGNIFICANTLY IMPROVED PERIOPERATIVE OUTCOMES.

Cardiac program. Standardized processes included (1) preoperative patient education, (2) carbohydrate loading 2 hours before general anesthesia, (3) multimodal opioid-sparing analgesia, (4) goal-directed perioperative insulin infusion, and (5) a rigorous bowel regimen. All cardiac anesthesiologists and surgeons agreed to follow the standardized pathway for adult cardiac surgery cases. The 1-year outcomes were compared between the 9 months pre- and post-ERAS Cardiac implementation using prospectively collected, retrospectively reviewed data.

**Results:** Comparing the pre- (N = 489) with the post- (N = 443) ERAS Cardiac groups, median postoperative length of stay was decreased from 7 to 6 days (P < .01). Total intensive care unit hours were decreased from a mean of 43 to 28 hours (P < .01). The incidence of gastrointestinal complications was 6.8% pre-ERAS versus 3.6% post-ERAS implementation (P < .05). Opioid use was reduced by a mean of 8mg of morphine equivalents per patient in the first 24 hours postoperatively (P < .01). Reintubation rate and intensive care unit readmission rate

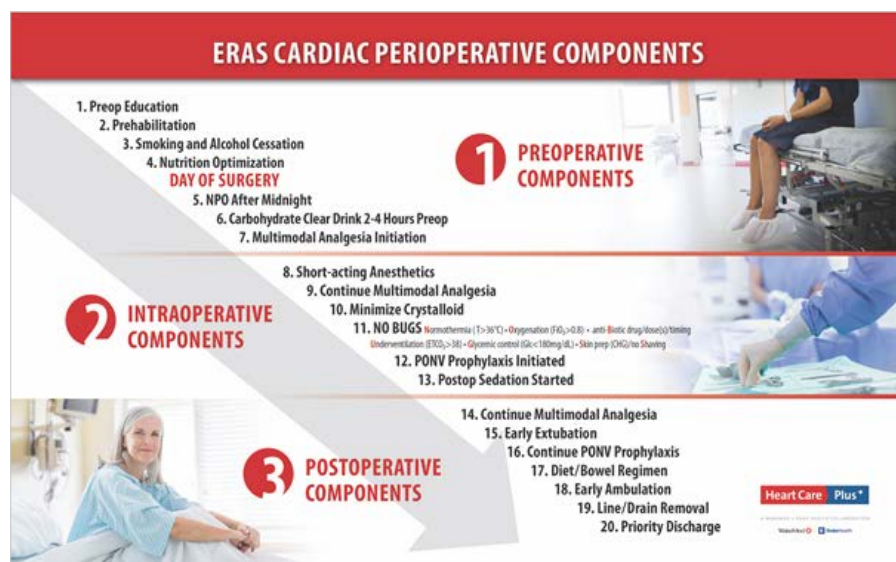
**Conclusions:** Initial clinical and survey data after the first year of a system-wide ERAS® Cardiac program were associated with significantly improved perioperative outcomes. We believe this value-based approach to cardiac surgery can consistently result in earlier recovery, cost reductions, and increased patient/staff satisfaction. (J Thorac Cardiovasc Surg 2019;:1-8)

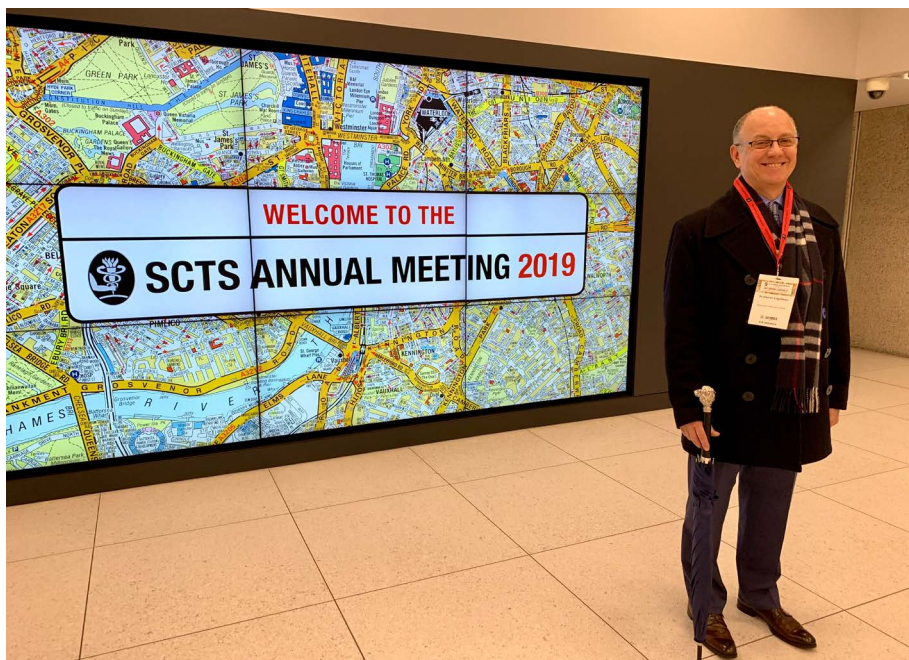
### Central Message

The study reports on systematic application of enhanced recovery principals to a US cardiac surgery program with reduced opioid use and LOS, and improved patient and staff satisfaction.

### Perspective

Our ERAS Cardiac program is an evidencebased interdisciplinary process that has not previously been systematically applied to cardiac surgery in the United States. We believe this value-based approach to cardiac surgery can consistently result in earlier recovery, cost reductions, and increased patient/staff satisfaction.





Daniel Engelman, President of ERAS® Cardiac Society at the 2019 Annual Meeting of the Society of Cardiothoracic Surgery in Great Britain and Ireland where he presented ERAS® Cardiac outcomes and led an ERAS® Symposium.

## UPCOMING PRESENTATIONS:

April 2019 - Miami FL

[Association of Physician Assistants in Cardiothoracic and Vascular Surgery \(APACVS\) 38th Annual Meeting](#)

Presenting "Acute Kidney Injury Prevention After Cardiac Surgery", "Transition to Value Based Care", and "Alternative Post-op Pain Management" in an ERA of ERAS

May 2019 - Liverpool UK

[7th ERAS® World Congress](#)

ERAS Cardiac Session to include talks on convincing administrators of ERAS value, designing an ERAS program, nutrition, Post-op pain management without opiates, goal-directed therapy, and publishing quality ERAS evidence

May 2019 - Toronto, CA

[American Association of Thoracic Surgery 99th Annual Meeting](#)

Organizing Independent ERAS Cardiac Symposium with graded abstracts. Four Plenary sessions to include talks on ERAS best-practice guidelines, goal-directed therapy, prevention of acute kidney injury, blood management, novel ways to reduce delirium (see page 1 for more details)

May 2019 - Chicago, IL USA

[Society of Cardiovascular Anesthesiologists \(SCA\) Annual Meeting](#)

Workshop: Enhanced Recovery After Cardiac Surgery. Presenting on how to develop and implement a program, multimodal analgesia, opioid sparing anesthesia and early extubation, fluid management and goal-directed perfusion, regional analgesia hands-on workshop.

May 29-June 1 2019 - NY, NY

[ISMICS Annual Scientific Meeting](#)

ERAS principles fit well with minimizing intraoperative trauma through less invasive operations.

September 2019 - Baltimore, MD USA

[STS Critical Care Conference](#)

2 ½ day symposium

October 2019 - Orlando, FL

[American Society of Anesthesiologists \(ASA\) Annual Meeting](#)

Plenary Session: TBD topics

## RECENT PRESENTATIONS:

Review our presentations on our website  
[erascardiac.org](http://erascardiac.org)

### OUTCOMES

**Reducing ICU Hospital Re-admissions after Cardiac Surgery**

Dan Engelman

December 10, 2018

### REVIEW

**Fast Track Cardiac Surgery Revisited and Enhanced**

Richard Engelman

December 12, 2018

### IMPLEMENTATION

**Implementing an ERACS Program**

Seenu Reddy

December 12, 2018

### TARGETS

**Modern Chest Tube Strategies to Reduce Complications and Costs**

Louis Perrault

December 12, 2018

### TARGETS

**Options for Sternal Closure and Prevention of Wound Infection**

Marc Gerdisch

December 12, 2018

### TARGETS

**Multimodal Approaches to Reduce Postoperative AKI**

John Kellum

December 12, 2018

### TARGETS

**Perioperative Glycemic Control and Early ERAS Cardiac Data**

Judson Williams

December 12, 2018

### TARGETS

**The Impact of Frailty and the Value of PREHAB**

Rakesh Arora

December 12, 2018

### OUTCOMES

**Evidenced or Entrenched**

Kevin Lobdell

December 12, 2018

### REVIEW

**History of ERAS and Why it is the Standard of Care**

Gudren Kunst

December 12, 2018

### OUTCOMES

**Modeling and Validating: EcoJustifications for ERAS Cardiac Interventions**

Edward Boyle

December 12, 2018

### TARGETS

**Enhanced Recovery by Minimizing Opioid Use After Cardiac Surgery**

Eric Roselli

December 12, 2018

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## OUR MISSION

*The mission of the ERAS® Cardiac Society is to develop protocols to improve recovery through research, education, audit and implementation of evidence-based practice.*

### 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 Institutet) 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.



**Mallinckrodt**  
Pharmaceuticals



**Abbott**  
Nutrition



**Edwards**



**ZIMMER BIOMET**



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To learn more about our organization, including our board members and upcoming meetings:

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