ERAS® CARDIAC

NEWSLETTER

February 1, 2020 | VOLUME 03 | ISSUE 01

NEW INITIATIVES

ERAS® CARDIAC 2.0 FOR 2020

We are pleased to announce our "Guidelines for Perioperative Care: Enhanced Recovery After Surgery Society Recommendations" published in JAMA Surgery in August 2019, reached the milestone of over 100,000 views/downloads. It is significant that our contribution has garnered so much attention from our peers in cardiac surgery, cardiac anesthesia, critical care, and cardiac nursing. ERAS Cardiac looks forward to continuing to evaluate, standardize and disseminate best practice surrounding the perioperative care of cardiac surgical patients. Some of the areas we will be investigating in 2020 include:

Prevention of hospital acquired pressure injury (HAPI) prevention with silicone dressings:

In this month's JTCVS, Geller, et al, provide compelling reasons to use a foam silicone dressing to prevent sacral HAPI associated with cardiac surgery.[1] The majority of cardiac surgical patients are at high risk for HAPI and a number of proven prophylactic preventative measures have been described.[2] A HAPI perioperative care bundle may be a reasonable element in future expert consensus recommendations. During and after cardiac surgery, a pressure injury prevention bundle, which can include both sacral and heel silicone foam protection should be evaluated and considered.

Stop-Bang pre-op assessment for OSA:

Obstructive sleep apnea (OSA) is independently associated with a higher rate of long-term cardiovascular events after CABG and may have prognostic and economic significance in CABG surgery.[3] Patients with OSA who are not identified and treated with positive airway pressure preoperatively are at increased risks for cardiopulmonary complications after general and vascular surgery. Improving the recognition of OSA and ensuring adequate treatment may be a strategy to reduce risk for surgical patients with OSA.[4] The STOP-BANG questionnaire is a validated, eight-point

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"MOVE IN THE TUBE"

STUDIES HAVE REPORTED MINIMAL CHANGE IN STERNAL SEPARATION WHEN PATIENTS MOVE SAFELY USING SHORT LEVER ARMS CLOSE TO THE BODY

Cardiac surgery via a median sternotomy is the most commonly performed surgical procedure for coronary revascularisation and/valve procedures worldwide.[1] Following surgery it is common practice to restrict the use of the upper limb and trunk from 6 weeks up to 3 months to prevent sternal complications1,2. However these restrictions are derived from limited cadaver and bone replica model studies; are not consistent worldwide and promote passive patient participation in care delaying recovery.[1-3]

Presenting the evidence: several observational studies have reported minimal change in sternal separation and micromotion (>2 mm) during upper limb movement and functional tasks as measured by real-time

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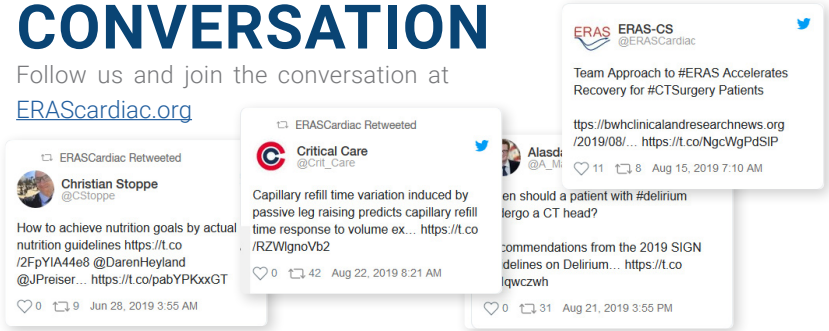

NEW INITIATIVES:
ERAS® CARDIAC 2.0 FOR 2020

Daniel Engelman MD, Michael Grant MD, Rakesh Arora MD, and V. Seenu Reddy MD

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dichotomized scale used to screen patients for obstructive sleep apnea and may need to be incorporated into standard preoperative cardiac surgery assessments.

Chlorhexidine mouthwash

Pneumonia is an index level postoperative complication in the STS database. Preventing pneumonia after cardiac surgery is challenging, especially in smokers and other high-risk patients. Daily mouthwash with chlorhexidine gluconate, a broad-spectrum antimicrobial, has been shown to significantly reduce the incidence of ventilator-associated pneumonia. Routine use of preoperative chlorhexidine mouthwash for preventing postoperative pneumonia after cardiac surgeries is not a universal practice. Among patients receiving preoperative chlorhexidine mouthwash, the risk of postoperative pneumonia is reduced by approximately one-half; its adoption in preoperative protocols may help improve patient outcomes.[5]

Shared decision making (SDM) in cardiac surgery

Comprehension of risks, benefits, and alternative treatment options is poor among patients referred for cardiac surgery, especially among the elderly and in many ethnic subgroups. Interventions early in the decision process, the use of individualized decision aids that employ graphic risk presentations, and a dedicated decisional coach have been identified by patients and providers as potential approaches.[6] An individualized approach to patients with multiple chronic conditions using SDM and goal setting is a desirable strategy for achieving guideline-concordant treatment in a patient-centered fashion.[7] Patient-centered care is defined as providing care that is respectful of, and responsive to, individual patient preferences, needs and values, while ensuring that patient values guide all clinical decisions. Empowering family members with SDM, safety and future care expectations engages them in the patient's care.

Modernizing sternal precautions and mobilization strategies following cardiac surgery

Despite limited evidence, sternal precautions in the form of highly restricted arm and trunk activity and strike weight limitations are routinely prescribed to patients following surgery to prevent sternal complications. Sternal precautions may exacerbate loss of independence and prevent patients from returning home directly after hospital discharge. In addition, the lack of formal mobilization protocols may contribute to deconditioning associated with restricting physical activity potentially contribute to loss of physical and psychosocial function, and quality of life. A clinical paradigm shift that encourages a greater amount of controlled upper body activity and less restrictive sternal precautions is possible. Early progressive functional activity and whole body therapeutic exercise can promote optimal and timely patient recovery. Early physical therapy and cardiac rehabilitation promote a less restrictive plan of care for patients following a median sternotomy.[8]

Efforts of optimize cardiac surgical perioperative nutrition

An interruption of nutritional intake is frequently observed after surgery. Early enteral nutrition (EN) is encouraged by international nutrition societies to enhance recovery after surgery. While the function of the gastrointestinal tract is the main determinant for initiation of EN after abdominal surgery, the key factor for initiation of nutrition in cardiac surgery patients may be hemodynamic stability, as the recently revised ASPEN guidelines recommend that EN should be withheld until the patient is hemodynamically stable. When EN is contraindicated or cannot be tolerated, existing guidelines recommend the initiation of parenteral nutrition (PN) in all critically ill patients within 3–7 days in patients with low nutrition risk and within 24 hours in patients with high nutrition risk. Despite the lack of evidence, EN is commonly withheld, believing that it may negatively affect gut integrity during a state of severe circulatory compromise, particularly in patients requiring high levels of vasopressor support, which may impact splanchnic perfusion and increased risk of GI complications. In addition, there are relevant practical hurdles such as the numerous interruptions of enteral feeding, delayed gastric emptying, and intestinal atony. Early PN may facilitate reaching caloric and protein targets while avoiding the potential issues associated with EN.[9]

IT IS SIGNIFICANT THAT OUR CONTRIBUTION HAS GARNERED SO MUCH ATTENTION FROM OUR PEERS IN CARDIAC SURGERY, CARDIAC ANESTHESIA, CRITICAL CARE, AND CARDIAC NURSING.

1. Geller CM, Seng SS. "How to Keep Patients Un-HAPI: Cardiac Surgery and Sacral Pressure Injuries": Invited Expert Opinion: Hospital Acquired Pressure Injuries. J Thorac Cardiovasc Surg, 2020 In Press.
2. Deng X, Yu T, Hu A. Predicting the Risk for Hospital-Acquired Pressure Ulcers in Critical Care Patients. Crit Care Nurse 2017;37:e1-e11.
3. Uchoa CHG, Danzi-Soares NJ, Nunes FS, et al. Impact of OSA on cardiovascular events after coronary artery bypass surgery. Chest 2015;147:1352-60.
4. Abdelsattar ZM, Hendren S, Wong SL, Campbell DA, Jr., Ramachandran SK. The Impact of Untreated Obstructive Sleep Apnea on Cardiopulmonary Complications in General and Vascular Surgery: A Cohort Study. Sleep 2015;38:1205-10.
5. Bardia A, Blitz D, Dai F, et al. Preoperative chlorhexidine mouthwash to reduce pneumonia after cardiac surgery: A systematic review and meta-analysis. J Thorac Cardiovasc Surg 2019;158:1094-100.
6. Gainer RA, Curran J, Buth KJ, David JG, Legare JF, Hirsch GM. Toward Optimal Decision Making among Vulnerable Patients Referred for Cardiac Surgery: A Qualitative Analysis of Patient and Provider Perspectives. Med Decis Making 2017;37:600-10.
7. Yu CH, Ivers NM, Stacey D, et al. Impact of an interprofessional shared decision-making and goal-setting decision aid for patients with diabetes on decisional conflict--study protocol for a randomized controlled trial. Trials 2015;16:286.
8. El-Ansary D, LaPier TK, Adams J, et al. An Evidence-Based Perspective on Movement and Activity Following Median Sternotomy. Phys Ther 2019;99:1587-601.
9. Hill A, Nesterova E, Lomivorotov V, et al. Current Evidence about Nutrition Support in Cardiac Surgery Patients-What Do We Know? Nutrients 2018;10.

RECOVERY:

EVIDENCE FOR PHYSICAL ACTIVITY AFTER STERNOTOMY: AN OPEN AND SHUT CASE FOR ENHANCED RECOVERY

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ultrasound in cohorts of patients with sternal instability and without sternal complications respectively (Figure 1).[2,3] Adams et al (2014) also reported that in over 32 activities of daily living the forces required far exceeded those produced by upper limb exercise4. More recently Katijjahbe et al (2018) conducted a randomised controlled study of a program of standard sternal precautions compared to active upper limb participation and reported no adverse events.[5]

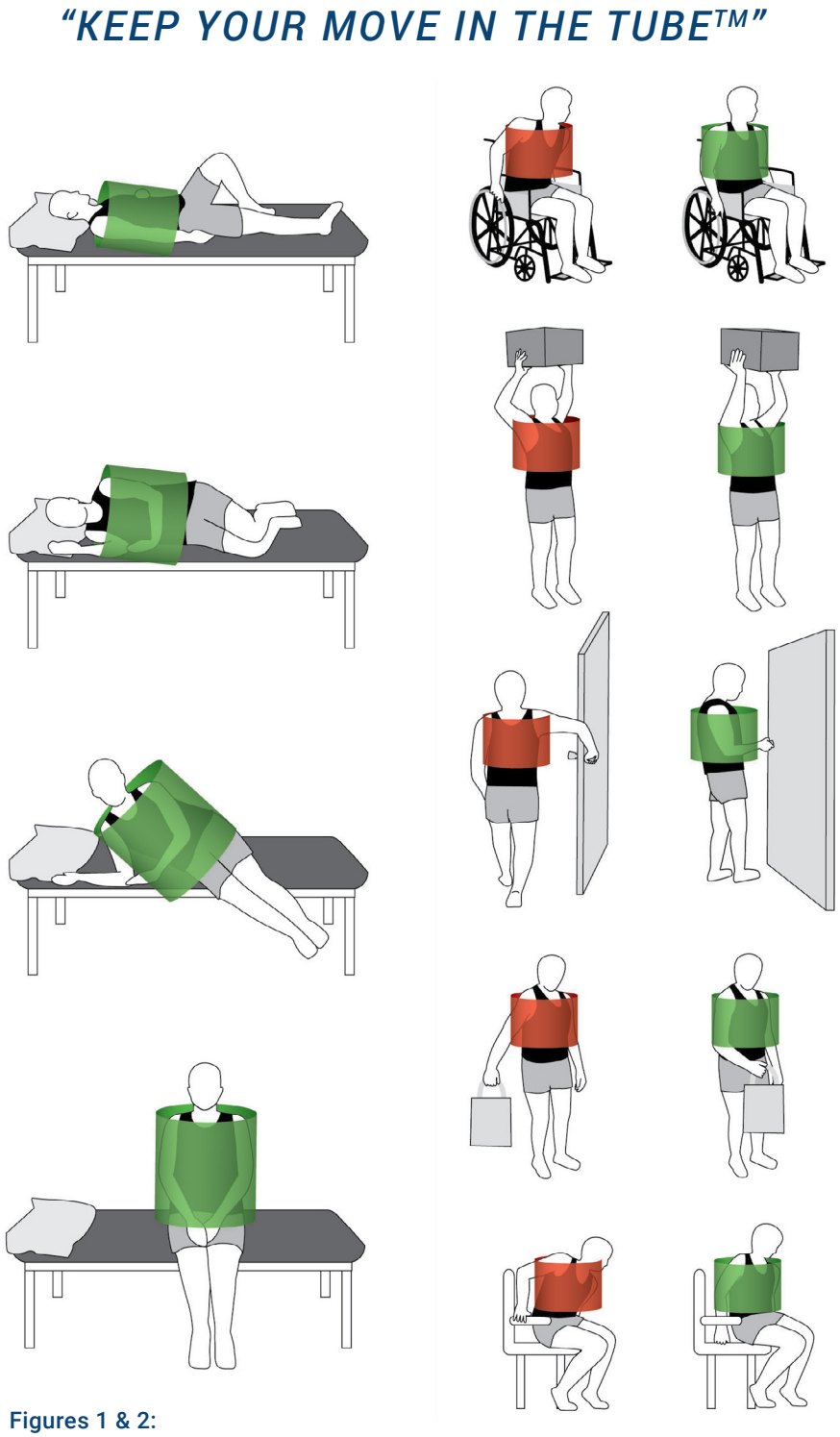
This research coupled by literature that validates the safety and feasibility of moderate intensity exercise has prompted a shift in clinical practice and rehabilitation after cardiac surgery towards active patient engagement and participation in exercise and physical actiivty.[6]

"Move in the Tube"

Keep Your Move in the Tube™ (MinT) guides patients to move safely using short lever arms close to the body[1]. MinT employs simple graphics depicting movements "in a green tube" and "out of a red tube" as illustrated in Figure 2. By moving within the "tube" and being guided to move within individual limits of pain and discomfort no particular restrictions need to be prescribed following a median sternotomy.[1] Utilization of MinT has the potential to replace traditional, inconsistent sternal precautions with an approach that is consistent and promotes active participation for enhanced recovery following cardiac surgery.

1. El-Ansary, Doa; LaPier, Tanya Kinney; Adams, Jenny; Gach, Richard; Triano, Susan; Katijjahbe, Md Ali; Hirschhorn, Andrew D.; Mungovan, Sean F.; Lotshaw, Ana; Cahalin, Lawrence P. An Evidence-Based Perspective on Movement and Activity Following Median Sternotomy (Invited Review). Physical Therapy, Vol. 99, no. 12 (Dec 2019), pp. 1587-1601 doi: https://doi.org/10.1093/ptj/pzz126

2. El-Ansary D, Waddington G, Adams R. Measurement of non-physiological movement in sternal instability by ultrasound. Ann Thorac Surg



Figures 1 & 2:
Real-time Ultrasound Image of the sternum following sternotomy during bilateral upper limb elevation. Sternal edge separation in the coronal plane (lateral direction) is 0.01cm and in the sagittal plane (antero-posterior direction) is 0.02cm. The white squares on this image demark the sternal edges. *Reproduced with permission from Baylor Scientific Publications Office, 3500 Gaston Avenue, Dallas, TX 75246*

COMPLICATIONS:

MANAGEMENT OF VASOPLEGIA AFTER CARDIAC SURGERY

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Vasoplegia or vasoplegic shock is a pathologic loss of vascular tone resulting in refractory hypotension with a normal-to-high cardiac output and low systemic vascular resistance. Depending on how it's defined, it can occur in 5-45% of patients after cardiac surgery and highly associated with early morbidity and mortality. Part of the diagnostic dilemma is that hypotension after cardiac surgery may also be related to a low cardiac output state, hemorrhage, or cardiac tamponade each of which requires a different management strategy.

Many risk factors of postoperative vasoplegia have been reported including medications such as angiotensin-converting enzyme inhibitors, beta-blockers and calcium channel blockers, amiodarone, tricyclic antidepressants amongst others. Intraoperative factors such as blood transfusions, longer duration of cardiopulmonary bypass, and warmer core temperatures have been identified.

Management begins with vasopressors: first-line usually norepinephrine and second-line arginine vasopressin. Vasopressor management is better understood by recognizing the concept of norepinephrine equivalents allowing comparison across different vasopressors and dosages. Thus, a simple observation of one versus two vasopressors may not be meaningful when comparing vasoconstrictors of varying efficacy.

VASOPLEGIA CAN BE A FORMIDABLE CHALLENGE AFTER CARDIAC SURGERY. NEWER PHARMACOLOGICAL AGENTS MAY OFFER PROMISE IN OF THIS CONDITION.

The one randomized trial in cardiac surgery directly comparing monotherapy with norepinephrine to vasopressin found less atrial fibrillation and acute kidney injury with similar mortality for the vasopressin group. The largest systematic review of 15 trials in predominantly sepsis patients showed combination norepinephrine and vasopressin to be better than single norepinephrine.

When high doses of multiple vasopressors are not sufficient, i.e. norepinephrine equivalent dose of 0.3 mcg/kg/min, one possibility is to initiate treatment with angiotensin II (Giapreza TM, La Jolla Pharmaceuticals. San Diego, CA). Once a mean arterial pressure of 65-70 mmHg is achieved and other vasopressors are down-titrated, the angiotensin II is weaned off. Occasionally rescue measures including glucocorticoids and mineralocorticoids, methylene blue, hydroxycobalamin, and combination high dose vitamin C and thiamine after administration of angiotensin II can be used to wean off vasopressors.

Vasoplegia can be a formidable challenge after cardiac surgery. Newer pharmacological agents may offer promise in of this condition. More trials specifically in cardiac surgery patients are needed.

Hajjar LA, Vincent JL, Galas FRB, Rhodes A, Landoni G, Osawa A, et al. Vasopressin versus Norepinephrine in Patients with Vasoplegic Shock after Cardiac Surgery. Anesthesiology 2017;126:85-93.

McIntyre WF, Um KJ, Alhazzani W, Lengyel AP, Hajjar L, Gordon AC, et al. Association of Vasopressin Plus Catecholamine Vasopressors vs. Catecholamines Alone with Atrial Fibrillation in Patients with Distributive Shock.JAMA 2018;319(18):1889-1900.

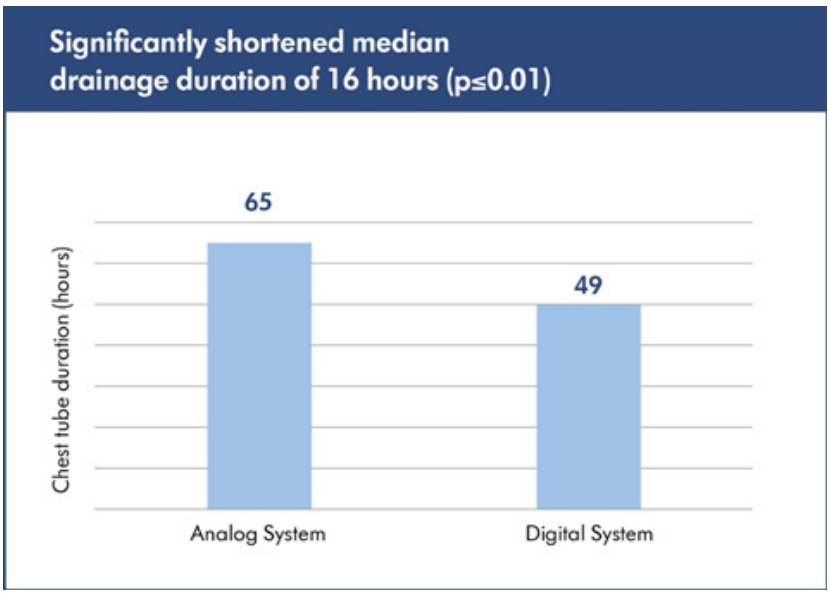
Khanna A, English SW, Wang XS, Ham K, Tumlin J, Szerlip H, Busse LW, et al. Angiotensin II for the Treatment of Vasodilatory Shock. New Engl J Med 2017;377:419-30

DRAINAGE:

RESULTS FROM AN RCT, COMPARING A DIGITAL WITH AN ANALOG DRAINAGE SYSTEM IN CARDIAC SURGERY PATIENTS

A randomized controlled trial comparing a digital chest drainage system with traditional analog wet-seal drainage system in 340 cardiac surgery patients was published in the December issue of Journal of Thoracic Disease. Use of the digital drainage system led to a significant reduction in the incidence of X-rays to detect air leaks (p≤0.01), a significantly shortened time to chest drain removal (p≤0.01) and a trend toward decreased re-exploration due to tamponade/bleeding (p=0.19). Based on these results, the authors concluded that the use of digital drainage systems can be safely applied in cardiac surgery patients with the benefit of shortened time with chest drains.

The full manuscript can be read at:
http://dx.doi.org/10.21037/jtd.2019.12.20.

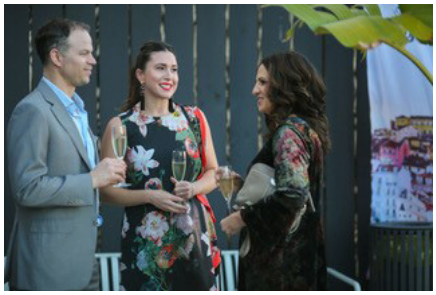


CONNECTIONS:

>> VIDEO

Networking, collaboration, and exchange of ideas at ERAS Cardiac Society Event in Lisbon during the 2019 European Association of Cardiothoracic Surgery (EACTS) Annual Meeting.

>> Click to Watch the Video



Surgeons and other professionals sharing ideas at the ERAS Cardiac Society event at the European Association of Cardiothoracic Surgery (EACTS) Annual Meeting in Lisbon, Portugal 2019.

UPCOMING MEETINGS:

Jan 25-28 STS, New Orleans
Society of Thoracic Surgeons Annual Meeting

April 15-17, Baltimore, MD
American Society for Enhanced Recovery Annual Meeting

April 18-22, West Palm Beach, FL
Society of Cardiovascular Anesthesiologists

April 25-28, NY, NY
American Association for Thoracic Surgery

June 25-27, Niagara-on-the-Lake. CA
Canadian Society of Cardiac Surgeons

August 26-28, New Orleans, LA
ERAS International/USA Annual Meeting

RECENT PRESENTATIONS:

Review our presentations on our website >> erascardiac.org

REVIEW
CTSNet: ERAS Guidelines for Perioperative Care in Cardiac Surgery
Daniel Engelman MD, Louis Perrault MD, Marc Gerdisch MD, Michael Grant MD, and Judson Williams MD.
July 24, 2019

IMPLEMENTATION
CTSNet: "ERAS in Cardiothoracic Surgery and Digital Chest Drains."
Olle Ljungqvist MD, Tim Batchelor MD, and Jim Coates MD
July 8, 2019

REVIEW
CTSNet: "Enhanced Recovery After Cardiac Surgery Part II: Intraoperative and Postoperative."
Daniel Engelman MD, Rakesh Arora MD, Michael Grant MD, Kevin Lobdell MD, and Louis Perrault MD
June 9, 2019

REVIEW
CTSNet: "Enhanced Recovery After Cardiac Surgery Part I: Background and Preoperative Recommendations."
Daniel Engelman MD, Rakesh Arora MD, Edward Boyle MD, and Kevin Lobdell MD.
May 29, 2019

OUTCOMES
Evidenced or Entrenched
Kevin Lobdell
December 12, 2018

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
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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 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.

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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.

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email: vsreddymd@gmail.com

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