STS MEETING BULLETIN

MONDAY | JAN. 28, 2019

THE SOCIETY OF THORACIC SURGEONS
55th ANNUAL MEETING
SAN DIEGO, CA | sts.org

MONDAY

6:30 a.m. – 5:00 p.m.
Registration
Hall F Lobby

9:00 a.m. – 4:30 p.m.
Exhibit Hall
Halls EFG

7:15 a.m. – 9:15 a.m.
Career Navigation and Development: Hot Topics to Enhance Your First 7 Years of Practice
Room 31AB

Congenital: Pediatric Congenital I
Room 32

EACTS @ STS: Which Arch Operation Should I Do? Decision-Making During Type A Dissection Repair
Room 33

ESTS @ STS: Controversial Issues in General Thoracic Surgery—Perspectives From Europe and North America
Room 30ABCD

STS/ISHLT Joint Symposium: The Evolution of Mechanical Circulatory Support—International Perspectives and Universal Challenges
Room 29AB

8:15 a.m. – 9:15 a.m.
Basic Science Research: Adult Cardiac
Room 30E

Basic Science Research: General Thoracic
Room 31C

Diversity and Inclusion in Cardiothoracic Surgery: What Is the Real Value?
Room 29CD

9:30 a.m. – 10:15 a.m.
Featured Abstract Presentations
Ballroom 20

11:00 a.m. – 11:10 a.m.
Introduction of the President: Robert S.D. Higgins
Ballroom 20

11:10 a.m. – 12:15 p.m.
Presidential Address: Keith S. Naunheim
Ballroom 20

1:15 p.m. - 2:15 p.m.
Late-Breaking Data
Room 30E

1:15 p.m. – 3:15 p.m.
Adult Cardiac: Aorta I
Room 33

Adult Cardiac: Ischemic
Room 31AB

Congenital: Pediatric Congenital II
Room 32

General Thoracic: Lung Cancer I
Room 29CD

General Thoracic: Lung Transplantation
Room 29AB

SVS @ STS: Sharing Common Ground for Cardiovascular Problems
Room 31C

1:15 p.m. – 5:00 p.m.
Clinical Scenarios: The Heart Team
Room 30ABCD

4:00 p.m. – 5:00 p.m.
Adult Cardiac: Arrhythmia/Atrial Fibrillation
Room 29CD

see **SCHEDULE**, page 3

Future Is Promising for Cancer Immunotherapy

Laurie H. Glimcher, MD

Immunotherapy may be the key to transforming cancer from a death sentence to a chronic condition. Some progress has already been made; checkpoint blockade has changed the prognosis for 10 usually lethal tumor types, including stage IV melanoma.

"If we can combine data in the patient medical record, immunoprofile with tumor genomics, pathology, and imaging, we should be able to predict the optimal treatment for all of our cancer patients and treat them successfully," said Laurie H. Glimcher, MD, President and CEO of the Dana-Farber Cancer Institute in Boston. "I think we can get there in 3 to 5 years."

Dr. Glimcher drew a guarded but hopeful picture during the Thomas B. Ferguson Lecture, Cancer Immunotherapy: The End of the Beginning. The immune system has long been a backwater in oncology research. That changed when immunotherapy produced a Nobel prize in 2018 for James P. Allison, PhD, of MD Anderson Cancer Center in Houston, and Tasuku Honjo, MD, PhD, of Kyoto University in Japan.

Their discoveries led to checkpoint inhibitors, blocking receptors that prevent T cells from attacking tumor cells. Checkpoint blockade is the most successful immunotherapy, but is successful in only 20% of patients. The next step is to expand both the robustness and duration of response, as well as the types of cancers amenable to immunotherapy.

Adaptive T cell therapy, or CAR-T, inserts a chimeric antigen receptor (CAR) into T cells that have been removed from the patient. The CAR is primed to attack specific surface antigens in the patient's own cancer. The activated T cells are expanded and reinfused into the patient. CAR-T can be very successful. It also can be highly toxic and is enormously expensive. The next steps are to develop off-the-shelf allogenic products and find other mechanisms to bind T cells to the tumor.

see **FERGUSON**, page 6

Clark Papers Highlight Top STS National Database Studies

Data from the STS National Database have been part of numerous research studies over the years that have advanced quality and patient safety in cardiothoracic surgery. Three of these studies, selected as the best among the many submitted for the 2019 Annual Meeting, were designated as this year's Richard E. Clark Memorial Papers.

The papers will be featured during specialty-specific scientific sessions on Monday and Tuesday.

TAVR USE INCREASES IN HIGHER-RISK PATIENTS WITH DEGENERATED BIOPROSTHESES

Ankur Kalra, MD

FDA approval of valve-in-valve transcatheter aortic valve replacement (TAVR) in 2015 raised a provocative possibility: Cardiac surgeons could stratify patients with degenerated bioprostheses by age and surgical risk, recommending younger and lower-risk patients for surgical aortic valve replacement (SAVR) and older and higher-risk patients for less invasive TAVR procedures.

A new analysis of the STS Adult Cardiac Surgery Database (ACSD) has shown that possibility became a reality very quickly.

"The robustness of the data is arresting," said Ankur Kalra, MD, of Case Western Reserve University School of Medicine and the Harrington Heart & Vascular Institute, both in Cleveland. "The data show a trend for a decrease in reoperative SAVR in the same year valve-in-valve TAVR was approved by the FDA. At least among surgeons and interventional cardiologists participating in the STS National Database, the new technology immediately moved into real-life clinical scenarios where sicker and older patients could suddenly be considered for the less invasive TAVR."

Richard E. Clark Memorial Paper: Adult Cardiac

Adult Cardiac: Aortic Valve/ Novel Technologies

Tuesday, January 29

1:00 p.m. – 1:15 p.m.

Room 29CD

Researchers focused on 4,239 patients in the ACSD who underwent isolated reoperation for degenerated aortic valve replacement from January 2012 through December 2016. The only option for replacement in 2012 to

see **CLARK PAPERS**, page 6

Don't Miss Today's Presidential Address

Anger Management 101: Why Am I Angry? Let Me Count the Ways

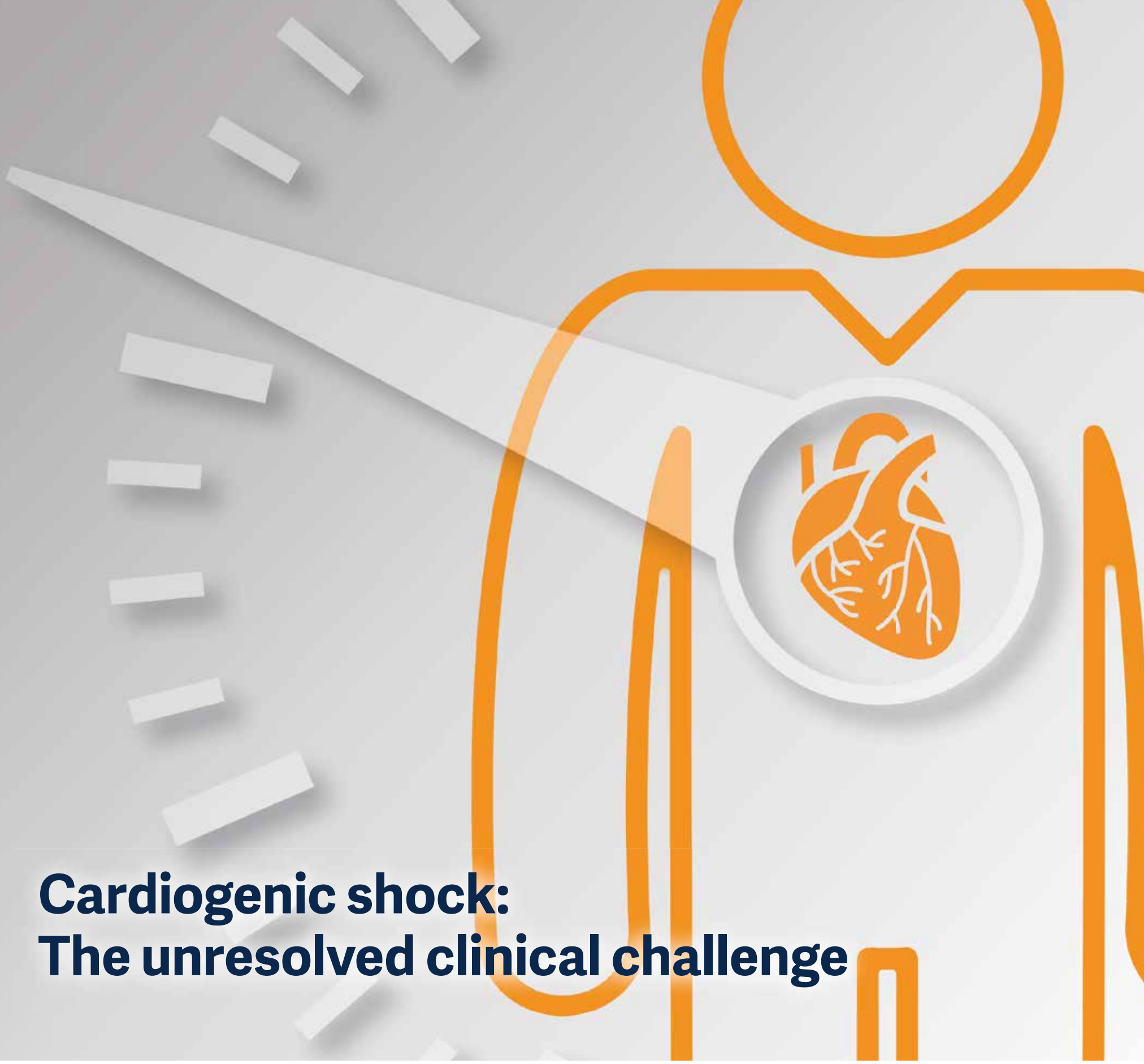
Keith S. Naunheim, MD

11:10 a.m. – 12:15 p.m., Ballroom 20

Business Meeting Tonight *(STS Members Only)*

5:15 p.m. – 6:15 p.m.

Room 33



Cardiogenic shock: The unresolved clinical challenge

Make the early diagnosis

To maximize benefit over risk, it's critical to learn how to identify cardiogenic shock early whether it is in the cath lab pre-PCI or in the ICU.[1]

Evaluate the risk vs benefit

Periprocedural bleeding was common among patients who underwent transcatheter intervention using large-bore catheters and was associated with a statistically significant increase in mortality, length of stay, and cost.[2]

Understand the economic impact

An 18-study clinical review showed percutaneous ventricular support with Impella does not lower death rates; nor is it safer or cheaper than usual treatment with balloon pumps.[3]

IAB therapy—reliable, convenient and cost effective without the added risk

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1. Atkinson TM, Ohman EM, O'Neill WW, et al. *JACC Cardiovasc Interv.* 2016 May 9;9(9):871-83. **2.** Redfors et al. *JAMA Cardiolog.* 2017;2(7):798-802. **3.** Ontario Quality Ontario. *Ont Health Technol Assess Ser* (Internet) 2017 Feb;17 (2):1-97 Available from: www.hqontario.ca/Evidence-to-Improve-Care/Health-Technology-Assessment/Journal-Ontario-Health-Technology-Assessment-Series

info.getinge.com/CardiogenicShockSupplement

GETINGE

AI Touches Cardiothoracic Surgery

Artificial Intelligence (AI) already exists in medicine. AI systems can read chest radiographs faster, cheaper, and—by some accounts—at least as accurately as skilled radiologists, according to Thomas M. Krummel, MD, of Stanford University in California. With approximately 18 robotic surgical devices in development, AI is almost certainly coming to cardiothoracic surgery.

"AI is already here in a big way," said Dr. Krummel. "Early stage medical technology may very well have intelligent components, and we will see robotic autonomy in surgery."

Dr. Krummel explored the growth of AI in medicine during Saturday's Tech-Con keynote address: Artificial Intelligence—Hope, Hype or Horror for Medical Tech. The reality, he said, is that AI contains elements of all three.

The hope is that AI can augment cardiothoracic and other surgeons to improve outcomes and reduce overall costs. The hype is that AI will replace surgeons and other skilled practitioners. The horror is that AI will out-evolve and replace humans.

How AI evolves in cardiothoracic surgery depends very much on how cardiothoracic surgeons approach, develop, and accept the technology, Dr. Krummel said. The most important barrier is simply understanding what AI is and what it is not, he added.

It is not a droid, some sort of *Star Wars* R2-D2, or even an artificial being. AI is nothing more than a series of algorithms: very explicit instructions designed to achieve a specific end. Explicit instructions are not, however, a perfect guide in an imperfect world filled with unpredictable events, as designers of self-driving cars have discovered in the past few months.

Algorithms can follow instructions to perfection, but instructions are not enough. Instructions must be interpreted, even for something as simple as washing hair. Most shampoo bottles carry simple instructions: lather, rinse, repeat. Without some sort of check, AI would repeat the cycle endlessly and never stop shampooing.

Another barrier is the sudden emergence of AI. However, AI is nothing new. It grew out of code-breaking algorithms designed by Alan Turing and his cryptographic team during World War II. The idea of developing and applying algorithms to solve broader problems emerged from a 1956 Dartmouth project as the thesis that anything humans can imagine can be turned into an algorithm and put to use.

It took half a century for computing technology to begin to catch up with the concept of AI, creating intelligent devices that can use knowledge to learn, to reason, to make useful decisions, and prove their value.

"Components matter more than we can imagine," Dr. Krummel said. "By next year, 80% of adults worldwide will be walking around with a smart phone—a super computer—in their pockets. That has a huge impact on the development and deployment of AI."

Companies like Amazon, Netflix, and Spotify can already predict our preferences in shopping, movies, and music more precisely than most of us can, he noted. MasterCard and VISA can accurately identify potential fraud.

In 2018, IDx became the first medical device approved by the Food and Drug Administration to diagnose diabetic retinopathy. Face2Gene uses facial recognition to diagnose a growing set of hereditary conditions in children, and Suki AI already offers physicians relief from the burdens of electronic medical record (EMR) reporting using a phone-based AI app that Dr. Krummel likened to Suri for physicians.

Thomas M. Krummel, MD

AI is moving more deeply into medicine than most physicians realize, he added. The Veterans Administration is using Deepmind, developed by Google's artificial intelligence lab, to predict and prevent kidney disease. IBM's Watson missed expectations in diagnosing cancer, largely because AI requires that answers be known in order to follow rules to find them. As more is learned about cancer diagnosis, expect AI-based diagnosis to improve.

More immediately, expect practical, cost-effective AI assistance in three areas: AI-assisted robotic surgery, AI-assisted administrative and office workflow, and image interpretation. Also in development are AI-assisted surgical assessment tools that could be used by practices, hospitals, payers, and credentialing bodies to evaluate surgical competence.

"We need to keep humans in the loop with AI," Dr. Krummel said. "We have the kind of nuanced intelligence that machines lack, at least to date. We'd better buckle up and get into the technology." ■

SCHEDULE

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4:00 p.m. – 5:00 p.m.

Adult Cardiac: Contemporary Practices in Surgical Therapy for Advanced Heart Failure
Room 29AB

Cardiothoracic Surgery Education
Room 30E

Congenital: Adult Congenital
Room 32

Critical Care Research
Room 31AB

Next-Generation General Thoracic Surgery
Room 33

Quality Improvement in Cardiothoracic Surgery
Room 31C

5:15 p.m. – 6:15 p.m.

Business Meeting (STS Members Only)
Room 33

6:30 p.m. – 7:30 p.m.

STS-PAC Reception (open to 2019 STS-PAC contributors)
Marriott Marquis San Diego Marina, Grand Ballroom 4

New STS Members Approved

The Society's Board of Directors approved 16 Active and 27 International Membership applicants on Sunday. View a list of the new STS members at **sts.org/new-members**. ■

Get Tips on Excelling Early in Your Career

The first few years after completing a cardiothoracic surgery residency can be challenging. Newly established surgeons must figure out how to build up a clinical practice, manage a wide variety of competing responsibilities, launch their research careers, and more.

A new session on Monday aims to help by reviewing challenges and solutions for cardiothoracic surgeons in their first 7 years of practice.

Vinay Badhwar, MD

"This is often a critical time in one's career, and it can be difficult to access information on navigating challenges outside of the operating room," said Vinay Badhwar, MD, Chair of the Workforce on Career Development.

One such challenge is determining how to negotiate that first contract. Most surgeons don't receive any instruction on this aspect of practice in their training, and it can be an intimidating process. The session will highlight the general ground rules for negotiations and provide talking points.

Speakers also will explain how to balance clinical and research responsibilities, connect with colleagues and patients on social media, and establish a strong mentor-mentee relationship.

"Mentorship is at the very core of career development, no matter your level," Dr. Badhwar said. "Learning how to find the right mentor, engage a mentor to get the most out of the interaction, and follow through on the advice are essential to optimizing the relationship."

The session will feature ample time for a lively group discussion forum on hot-button issues facing early career surgeons, including dealing with a difficult job, what to do when you're in over your head, and developing a niche.

"The faculty will aim to address all burning questions, no matter how simple or complex," Dr. Badhwar added. ■

> "This is often a critical time in one's career, and it can be difficult to access information on navigating challenges outside of the operating room."
>
> **VINAY BADHWAR, MD**

Career Navigation and Development: Hot Topics to Enhance Your First 7 Years of Practice

Monday

7:15 a.m. – 9:15 a.m.

Room 31AB

Take Advantage of Practice Resources on STS.org

Want more information on navigating the early years of practice? Visit **sts.org/career-development** for detailed answers to frequently asked questions and several blog posts on finding a first job, teaching as an early career surgeon, and other important topics.

Plenary Session Unveils New Approaches to Familiar Problems

Expanding the pool of donors for neonatal heart transplantation and using adjuvant therapy for node-positive esophageal cancer have the potential to improve patient outcomes, according to two studies that will be presented at today's plenary session.

Tara Semenkovich, MD, MPHS

In addition to these abstracts, a late-breaking study on platelet transfusion during the rewarming phase of cardiopulmonary bypass in neonates also will be presented. The three papers will be followed by the highly anticipated Presidential Address from Keith S. Naunheim, MD.

RESEARCH CONFIRMS PROMISING RESULTS FOR ADJUVANT THERAPY

A retrospective cohort study across nine institutions and more than 1,000 patients has found that adjuvant treatment following surgery for esophageal cancer is associated with a 24% reduction in mortality.

Median survival for patients who received adjuvant therapy following resection was 2.6 years, compared to 2.3 years for patients who did not receive adjuvant therapy.

"We know the optimal treatment is neoadjuvant chemotherapy or chemoradiation therapy followed by surgical resection if you have locally or regionally advanced cancer and you are a good operative candidate," said Tara Semenkovich, MD, MPHS, of the Washington University School of Medicine in St. Louis. "It is well established that patients who have residual positive lymph nodes following resection have a worse prognosis, but there was controversy regarding what to do about it."

John Mohan, MD

An earlier study at Washington University showed promising results for adjuvant therapy, but the cohort was only about 100 patients. A similarly small study from another institution found no benefit from adjuvant therapy. Population studies using the National Cancer Database suggested potential benefit, but the conclusion was clouded by possible selection bias.

"Clinical guidelines right now are ambiguous, as you might expect from the lack of good data," Dr. Semenkovich said. "This is the largest and most detailed cohort of esophageal cancer patients receiving adjuvant treatment that has ever been assembled to look specifically at this question. Our study makes a much stronger argument for providing adjuvant chemotherapy to patients who can tolerate it and can help guide clinical decision-making."

RESEARCHERS LOOK TO EXPAND DONOR POOL FOR NEONATAL HEART TRANSPLANTATION

In what may be the largest consecutive case series of newborn heart transplant patients ever presented, nearly all of the neonates who received transplants to treat congenital heart defects at one institution are still alive with the same hearts that were transplanted as long as 34 years ago.

"We wanted to show that babies who receive heart transplants do very well in the long run," said John Mohan, MD, of Loma Linda University School of Medicine in California. "If we can find ways to enlarge the organ pool, we could increase the applicability of transplantation and make a dramatic improvement in these babies' lives."

The dilemma of how to treat newborns with congenital heart defects has more to do with logistics than clinical issues. Heart transplantation has long been recognized as preferable to palliative reconstructive surgery, with a 5-year survival of 80%-85% following heart transplantation compared to 58%-76% for staged palliation. But the organ pool of neonatal hearts is so small that most potential candidates are never placed on the transplantation list.

The advent of infant car seats dramatically reduced the number of newborns suffering fatal head trauma, and the decline of sudden infant death syndrome resulting from putting infants to sleep on their backs virtually eliminated the other major pool of newborn hearts that was available in the 1980s and 1990s.

But there are at least two other pools of potential donors, Dr. Mohan said. One is the 600 to 700 babies born annually in the United States with anencephaly, who inevitably die. Policies regarding the determination of brain death in these infants are not uniform, and the issue is fraught with ethical questions.

A second potential pool is donation after circulatory determination of death (DCD). Transplants using DCD organs are currently less successful than transplantation of organs retrieved following brain death.

"If we can find a way to make donation after cardiac death more usable, that would increase the pool of organ donors," Dr. Mohan said. "We should seriously consider both these options if we want to increase the number of donor organs available for newborn heart transplantation." ■

Plenary Session
Monday
9:30 a.m. – 12:15 p.m.
Ballroom 20

"This is the largest and most detailed cohort of esophageal cancer patients receiving adjuvant treatment that has ever been assembled to look specifically at this question. Our study makes a much stronger argument for providing adjuvant chemotherapy to patients who can tolerate it and can help guide clinical decision-making."

TARA SEMENKOVICH, MD, MPHS

The Society of Thoracic Surgeons

STS MEETING BULLETIN
JANUARY 26–29, 2019

THE OFFICIAL NEWSPAPER OF THE STS 55TH ANNUAL MEETING

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Visit STS in the Exhibit Hall

Stop by the STS booth (#601) and hear about the latest the Society has to offer. You can learn more about member benefits, advocacy efforts (including STS-PAC), upcoming in-person educational courses on robotic surgery and thoracic endovascular aortic repair, recently released e-learning modules, the STS Research Center, and opportunities to participate in the STS National Database. You also can donate to The Thoracic Surgery Foundation, the Society's charitable arm, and get advice from *The Annals of Thoracic Surgery* staff on manuscript submissions, accessing *Annals* CME activities, and creating visual abstracts.

Additionally, STS members can update their contact information and pay membership dues. Non-members can fill out an application to begin taking advantage of the many benefits of STS membership. ■

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CLARK PAPERS

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2014 was SAVR. In 2015 and 2016, clinicians could use either SAVR or TAVR to replace a degenerated bioprosthesis.

They found that SAVR patients were older during the first period, 65.8 years, with a mean STS-predicted mortality of 4.55%. The mean age of SAVR patients declined to 64.5 years after the approval of valve-in-valve TAVR, and the mean STS-predicted mortality fell to 4.25%. There were no differences in rates for postoperative stroke, renal failure requiring dialysis, or mortality between the two periods.

"These trends reflect the availability of valve-in-valve TAVR for higher-risk patients," Dr. Kalra said. "The new technology is safe, and it is being used in everyday practice by the heart team."

FONTAN OPERATION OUTCOMES IMPROVE FOR PATIENTS WITH DOWN SYNDROME

Lauren A. Sarno, MD

A retrospective study using the STS Congenital Heart Surgery Database has found that although children with Down syndrome remain at higher risk for morbidity and mortality following the Fontan operation than children without Down syndrome, advancements in perioperative surgical care have improved in-hospital mortality for these children.

Researchers looked at patients with and without Down syndrome who underwent the Fontan operation between 2001 and 2016. Of the 12,074 patients, 81 had Down syndrome. The patients with Down syndrome had a higher in-hospital mortality rate (12.3%) than children without Down syndrome (1.6%). Patients with Down syndrome also had a longer length of hospital stay (12 days versus 9 days) and were at increased risk for complications, including delayed sternal closure, postoperative respiratory insufficiency, renal failure requiring dialysis, infection, chylothorax, cardiac failure, and cardiac arrest.

Richard E. Clark Memorial Paper: Congenital

Congenital: Pediatric Congenital I

Monday, January 28

7:15 a.m. – 7:30 a.m.

Room 32

At the same time, the in-hospital mortality rate for children with Down syndrome decreased from 21% during the first era (2001-2008) to 6% during the second era (2009-2016).

"No one ever wants to refuse surgery to a child," said Lauren A. Sarno, MD, of the Brody School of Medicine at East Carolina University in Greenville, NC. "If you find factors that are strong indicators of good Fontan outcomes such as minimal atrioventricular valve regurgitation, a normal pulmonary vascular system, and not a lot of other cardiac comorbidities, these patients can undergo the procedure. If we see a child who could possibly have a successful outcome, then I would recommend him/her for Fontan."

EARLY STAGE LUNG CANCER SURVIVAL IS EQUAL FOR LOBECTOMY AND SEGMENTECTOMY

Mark Onaitis, MD

An analysis of the STS General Thoracic Surgery Database (GTSD) has found that survival rates are similar for both lobectomy and segmentectomy when treating stage 1A lung cancer.

Lobectomy has long been the standard treatment for these patients. But a growing number of surgeons have urged consideration of segmentectomy in order to spare lung tissue and lower complication rates.

"You will never get criticized for doing a lobectomy," said Mark Onaitis, MD, of the University of California, San Diego. "But a segmentectomy preserves more lung tissue and function, which can be a benefit for patients."

For this study, researchers linked GTSD data with Medicare data in order to evaluate long-term survival and other outcomes in 1,476 matched patients with stage 1A lung cancer who received either lobectomy or segmentectomy. There was no difference in long-term survival between the two groups.

"For more advanced cases, pretty much everyone agrees that you should perform a lobectomy," Dr. Onaitis said. "But there has been considerable controversy regarding the most appropriate way to treat early stage disease. We now have a definitive answer, at least for STS National Database surgeons, that there is no difference in long-term survival for lobectomy versus segmentectomy."

Because the research was limited to the Medicare population, it is unknown whether the results are applicable to patients under the age of 65.

Dr. Onaitis said future research will compare the costs of the two operations in this study group. ■

"We now have a definitive answer, at least for STS National Database surgeons, that there is no difference in long-term survival for lobectomy versus segmentectomy."

MARK ONAITIS, MD

Richard E. Clark Memorial Paper: General Thoracic

General Thoracic: Lung Cancer II

Tuesday, January 29

7:15 a.m. – 7:30 a.m.

Room 29CD

Re-imagining Cardiothoracic Surgery

It was 2011 and incoming STS President Michael J. Mack, MD warned members that it was time to get on the train to treat structural heart disease or lose out. Eight years later, Tom C. Nguyen, MD, of The University of Texas Health Science Center in Houston, expanded Dr. Mack's admonition. He said that it is time to re-envision the future of cardiothoracic surgery or lose it.

Tom C. Nguyen, MD

Dr. Nguyen explained that there are two ways to conceive surgery—in terms of the tools used to treat disease or in terms of the diseases surgeons treat. Most cardiothoracic surgeons, societies, and equipment manufacturers think of our subspecialty in terms of the tools we use or develop.

The reality is that tools change—and at an increasing pace. More than 300,000 transcatheter valve replacements (TAVRs) have been performed worldwide since 2002 and now outnumber surgical AVRs. He noted that he believes cardiothoracic surgeons who define their work in terms of SAVR procedures are a dying breed. He predicts that surgeons who think of themselves as TAVR experts will be similarly displaced by the next wave of valve repair technologies.

The solution, Dr. Nguyen said, is to re-imagine cardiothoracic surgery in terms of the conditions we treat. Tools are nothing more than tools, sufficient for now and expected to be replaced by improved technologies.

Re-imaging thoracic surgery means developing a new training paradigm that focuses on the condition, not the tool, to capture the future. As a result, Dr. Nguyen called on his to look beyond specific technologies and create a new, standardized curriculum for subspecialty training. Cardiothoracic surgeons must become proactively involved in the creation, development, and implementation of new technologies as a matter of policy, practice, and survival, he said. ■

FERGUSON

continued from page 1

Bi-specific antibodies, which bind to both a T cell and a tumor cell at the same time, show good early results, Dr. Glimcher said.

Therapeutic cancer vaccines have largely failed, but work continues. Researchers at Dana-Farber and in Germany have shown positive results with a therapeutic melanoma vaccine in early clinical trials.

The tumor microenvironment (TME) is the least advanced immunotherapy. Tumors alter immune and other cell types in their immediate environment to create a protective immunosuppressive moat.

The most advanced TME research focuses on the IRE-1/XBP1 signaling pathway, the endoplasmic reticulum stress response. Disrupting the pathway drains the immunosuppressive moat, allowing the immune system to attack tumor while suppressing tumor growth. ■

Heart Team Decision-Making Adds Value

Treatment options for valve disease have grown exponentially from the days of simply choosing between tissue or mechanical valves. Now, determining the most appropriate treatment for each patient requires multidisciplinary perspectives.

Enter the heart team, a collaborative group of clinicians who can offer a wide range of viewpoints on the benefits and risks of rapidly evolving treatment strategies, leading to optimal patient selection and improved outcomes.

Vinod H. Thourani, MD

"We are entering into a new patient-centric experience that relies on the cardiac surgeon having a robust communication and interaction with cardiology colleagues," said Vinod H. Thourani, MD, of MedStar Heart and Vascular Institute in Washington, DC, a moderator for today's Clinical Scenarios: The Heart Team session.

Besides cardiac surgeons and interventional cardiologists, the suggested members of a heart team include cardiac anesthesiologists, intensivists, perfusionists, advanced practice providers, and cardiac imaging specialists.

The speakers in this session will draw from the latest research to identify decision-making challenges in mitral valve disease, aortic valve disease, and coronary artery disease.

A hot discussion topic will be the recently published COAPT trial, which showed that transcatheter mitral valve approximation in combination with guideline-directed medical therapy was superior to guideline-directed medical therapy alone for patients with symptomatic heart failure with grades 3 to 4+ mitral valve regurgitation. These findings have important implications for management decisions in practice.

Speakers also will discuss transcatheter approaches to valve replacement, which have become the first-line treatment in many situations. All-cause mortality and risk of stroke are similar for transcatheter and surgical procedures, but the risks of adverse events are distinct.

In addition, the debate over whether percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG) surgery is preferred for coronary revascularization will be highlighted. Several studies have sought to determine the factors affecting mortality and morbidity for each procedure, and recent research has indicated that the type of disease (multivessel or left main), coronary complexity, and diabetes status are important factors to consider in decision-making regarding PCI or CABG.

Heart team discussions of specific cases related to each of these topics will help attendees gain a greater understanding of the best approaches for their own patients.

"As our patients grow in complexity, it is incumbent that we stay purposeful in our approach to managing their care," said Dr. Thourani. ■

Clinical Scenarios: The Heart Team

Monday

1:15 p.m. – 5:00 p.m.

Room 30ABCD

"We are entering into a new patient-centric experience that relies on the cardiac surgeon having a robust communication and interaction with cardiology colleagues."

VINOD H. THOURANI, MD

Regional Perspectives Influence Treatment Options for Lung, Esophageal Cancers

The complex process of determining cancer stages requires accurate decision-making within the context of an interdisciplinary team. But standard general thoracic and esophageal diagnosis and treatment practices can vary due to a lack of uniformity between European and US practice guidelines.

Michael J. Weyant, MD

Mediastinal staging for clinical stage 1 non–small-cell lung cancer (NSCLC) is one example. Survival of all NSCLC patients is disappointing, with a 5-year survival of 18%. Accurate staging is crucial because it determines the choice of treatment and prognosis.

"There's a debate between European and North American surgeons about how extensive the staging should be," said Michael J. Weyant, MD, of the University of Colorado in Aurora.

Those differences will be highlighted during Monday morning's collaborative session from STS and the European Society of Thoracic Surgeons. Dr. Weyant and Gilbert Massard, MD, PhD, of the Centre Hospitalier in Strasbourg, France, will co-moderate the session that will feature experts from Belgium and the United States describing and debating best practices.

"Presenting both the European and North American perspectives will help us realize that even though we all view ourselves as modern, state-of-the-art thoracic surgery specialists, there are cultural differences that impact how lung and esophageal cancers are treated."

MICHAEL J. WEYANT, MD

"Presenting both the European and North American perspectives will help us realize that even though we all view ourselves as modern, state-of-the-art thoracic surgery specialists, there are cultural differences that impact how lung and esophageal cancers are treated," Dr. Weyant said. "Part of it is based on societal resources, and part of it is based on how patients in different geographic areas perceive invasive treatments for cancer."

Also during the session, experts from the United Kingdom and the United States will present their respective viewpoints on using mediastinal staging to select clinical stage IIIAN2 NSCLC lung cancer patients as candidates for surgery after induction therapy. Speakers also will offer insights on the role of induction therapy for select groups of patients with cT2N0 esophageal cancer.

"There is a continuing debate over whether those patients should get chemotherapy and radiation therapy prior to surgery," Dr. Weyant said.

Both the European and North American approaches to diagnosis, staging, and multimodal treatment have merit. But by exploring the geographic vantage points in treatment strategies, surgeons from both sides of the Atlantic may come away with different ways of doing things to optimize patient outcomes.

"Surgeons might see an acceptable treatment pathway presented that they might use in a subsegment of their patients they hadn't considered before," Dr. Weyant said. ■

ESTS @ STS: Controversial Issues in General Thoracic Surgery — Perspectives From Europe and North America

Monday

7:15 a.m. – 9:15 a.m.

Room 30ABCD

THANK YOU!

The Society of Thoracic Surgeons gratefully acknowledges the following companies for providing educational grants for the STS 55th Annual Meeting.

Platinum Benefactors

Provided $50,000 or more

Abbott

Medtronic

Silver Benefactors

Provided $10,000-$24,999

Boston Scientific Corporation

Davol

Johnson & Johnson Medical Devices Companies

Olympus

This list is accurate as of January 27, 2019.

Industry-Sponsored Satellite Activities

Satellite activities are programs offered by industry and held in conjunction with the STS 55th Annual Meeting. They are not developed or sponsored by STS.

MONDAY

5:30 a.m. – 7:00 a.m.
CHF Solutions
Aquadex FlexFlow System – A Simple Approach to Ultrafiltration in the Management of Fluid-Overloaded Cardiac Surgery Patients
Marriott Marquis San Diego Marina – Grand Ballroom 1
333 W. Harbor Dr.

6:30 p.m. – 9:00 p.m.
DePuy Synthes
Advanced Topics in Rib Fixation
Marriott Marquis San Diego Marina
Rancho Santa Fe 1 & 2
333 W. Harbor Dr.

6:30 p.m. – 8:30 p.m.
HCA Healthcare
Cardiothoracic Surgery Mixer
Water Grill, 615 J St.

6:30 p.m. – 9:00 p.m.
Medtronic
Valiant Navion Dinner: The Next Generation in TEVAR
Marriott Marquis San Diego Marina
Grand Ballroom 10
333 W. Harbor Dr.

6:30 p.m. – 10:00 p.m.
Zimmer Biomet CMF & Thoracic
Improving Outcomes and Reducing Complications in Cardiac Surgery
Morton's The Steakhouse, 285 J St.

This list is accurate as of January 27, 2019.

2019 ANNUAL MEETING EXHIBITORS

A&E Medical 817
Farmingdale, NJ
A&E Medical® reinvents expectations by offering surgeons a comprehensive portfolio, including the Tritium® SCP Sternal Cable Plate system, the MYO/Wire II sternum wires, the DoubleWire high strength sternal closure system, and the A&E Medical sternal cable system. Ultrathin mono, bi and quad polar pacing wires, rotating surgical punches, and patient connecting cables rounds out the portfolio.

Abbott 412
Santa Clara, CA
At Abbott, we're committed to helping people live their best life through the power of health. For more than 125 years, we've brought new technologies to the world—in nutrition, diagnostics, medical devices and branded generic pharmaceuticals—that create more possibilities for more people at all stages of life.

Abbott Nutrition 306
Columbus, OH
Abbott is one of the world's leading authorities in science-based nutrition for all stages of life. As your nutrition partner, we invite you to explore our Ensure Surgery Products, part of your patients' recovery. Stop by our booth to sample our exciting products!

Abiomed, Inc 725
Danvers, MA
Based in Danvers, Massachusetts, Abiomed, Inc. is a leading provider of medical devices that provide circulatory support. Our products are designed to enable the heart to rest by improving blood flow and/or performing the pumping of the heart. For additional information, please visit: www.abiomed.com.

Acute Innovations 1009
Hillsboro, OR
ACUTE Innovations® commits to providing innovative solutions for challenging thoracic procedures. Our portfolio offers solutions for sternum closure, rib fracture stabilization and reconstructions of the chest wall. ACUTE Innovations' products include AcuTie® II Sternal Closure System, BioBridge® Resorbable Chest Wall Stabilization Plate, and the RibLoc® U Plus Chest Wall Plating System.

Admedus 424
Minneapolis, MN
www.admedus.com ADMEDUS, is a global healthcare company, dedicated to bringing innovative medical technologies to market. CardioCel® and CardioCel Neo are biomaterial scaffolds, made with ADAPT® Technology, for superior biocompatibility and unparalleled calcium resistance. Admedus' new 3D-shaped portfolio, CardioCel 3D, provides unique solutions for cardiac reconstructions.

AI Care LLC 302
Playa del Rey, CA

All in Store LLC 329
Las Vegas, NV

American Association for Thoracic Surgery 647
Beverly, MA
Founded in 1917, the American Association for Thoracic Surgery is dedicated to excellence in research, education, and innovation in cardiothoracic surgery and has become an international professional organization of more than 1325 of the world's foremost cardiothoracic surgeons. www.aats.org

AngioDynamics 1142
Latham, NY
A leading provider of innovative, minimally invasive medical devices used by professional healthcare providers for vascular access, surgery, peripheral vascular disease and oncology. AngioDynamics' diverse product lines include market-leading fluid management systems, angiographic products, thrombolytic products and venous products. More information is available at www.AngioDynamics.com.

Army Physician Outreach Team 1315
Culver City, CA

Astute Medical 1008
San Diego, CA
Astute Medical, manufacturer of the NephroCheck Test®, is dedicated to improving the diagnosis of high-risk medical conditions and diseases through the identification and validation of protein biomarkers to serve as the basis for novel diagnostic tests. Our focus is community and hospital-acquired acute conditions that require rapid diagnosis/risk assessment such as acute kidney injury and sepsis.

Atlas Medical USA 843
Tustin, CA
Atlas Medical is pleased to introduce the latest in cardiac insufflation technology. The TEMED Gas Diffuser requires significantly less CO_2 to de-air the cardiac cavity. Reduced bypass times and fewer micro-emboli associated with CO_2 diffusers can now be achieved without the increased risk of patient acidosis.

AtriCure, Inc 401
Mason, OH
AtriCure provides innovative technologies for the treatment of Afib and related conditions. The Isolator® Synergy™ Ablation System is FDA approved for the treatment of persistent Afib. AtriCure's AtriClip Left Atrial Appendage (LAA) Exclusion System products are the most widely sold LAA management devices worldwide, with more than 150,000 implanted.

Auris Health 825
Redwood City, CA
With the Monarch™ Platform, Auris™ offers physicians revolutionary robotic endoscopic technology. The Monarch Platform is designed to enable physicians to diagnose, and eventually treat hard-to-reach lung nodules with greater precision than ever before. It is designed to be used in hospital operating rooms or endoscopy suites outfitted for bronchoscopy procedures.

Aziyo 904
Silver Spring, MD
ProxiCor for Pericardial Closure and Cardiac Tissue Repair is an extracellular matrix (ECM) used in various cardiac and vascular surgery applications. It remodels over time into healthy, vascularized tissue. The products have been used in over 1,000 hospitals and implanted in 165,000 cardiovascular applications.

Baylis Medical 1001
Mississauga, Canada
Baylis Medical is a world leader in the development and commercialization of high-performance cardiology devices that help physicians deliver life-changing therapies to patients. Headquartered in Canada, and with offices world-wide, our clinical solutions have been Improving the Lives of People Around the World for over 30 years. For more information, visit www.baylismedical.com.

BD 739
Franklin Lakes, NJ
BD is a global medical technology company advancing health by improving discovery, diagnostics and care delivery. Our innovative product portfolio, leadership and partnerships help make a difference for global healthcare.

Berlin Heart, Inc 911
The Woodlands, TX
Berlin Heart, the only company worldwide, that develops, manufactures and distributes VADs for patients of every age and body size. EXCOR® Pediatric provides medium to long-term circulatory support specifically for infants and children awaiting heart transplants. EXCOR Pediatric is approved for use in the USA under HDE regulations by FDA.

BFW, Inc 410
Louisville, KY
BFW is a worldwide technological leader in surgical illumination and headlight video imaging. Experience the foremost innovations in bright, portable OR quality LED headlights, our Hatteras™ LED light source - unmatched intense illumination for headlights and instrumentation, and state-of-the-art Pharos HD™ Coaxial Headlight/Video Imaging System.

Biomed Simulation, Inc 1143
San Diego, CA
Biomed Simulation, Inc. supplies PATIENT SIMULATORS for surgical and critical care applications. Biomed's flagship simulator, "Califia", connects directly to an HLM or ECMO machine providing realistic patient responses. Its programmability and integration with a wide range of monitors allow the delivery of consistent, robust clinical scenarios

Biom'up USA, Inc 926
New York, NY
Founded in 2005, Biom'up, a specialist in collagen-based absorbable medical devices for biosurgery, is developing a new generation hemostatic product composed of patent-protected biopolymers. With broad expertise in biomaterials, Biom'up is creating innovative and clinically proven products that are used in many surgical specialties such as cardiothoracic and general surgeries. Biom'up is committed to the design, development, and delivery of novel, high-performing solutions that make life easier for surgeons and better for patients.

BioStable Science & Engineering 1000
Austin, TX
BioStable Science & Engineering is developing and commercializing proprietary valve repair technologies that provide an alternative to valve replacement for aortic valve disease. The company's HAART Aortic Annuloplasty Devices are designed to simplify and standardize aortic valve repair for patients undergoing surgery for aortic insufficiency or root aneurysm.

Bon Secours Mercy Health 1040
Cincinnati, OH

Boston Medical Products, Inc 841
Shrewsbury, MA
As the exclusive distributor for NOVATECH® in the US, Boston Medical Products offers an extensive range of TRACHEOBRONXANE™ DUMON™ stents, TONN™ stent applicators and most recently, STERITALC® Sterile Talc.

Boston Scientific 940
Minneapolis, MN
Boston Scientific transforms lives through innovative solutions that improve the health of patients around the world. As a global medical technology leader for 35 years, we advance science for life by providing a broad range of performance solutions that address unmet patient needs and reduce the cost of health care.

Cardio Renal Society of America 1202
Phoenix, AZ

Centese 1319
Omaha, NE
Centese is the producer of Thoraguard™. A new surgical drainage system developed to meet the needs of cardiothoracic surgeons and their patients.

CHF Solutions 1100
Eden Prairie, MN
CHF Solutions is focused on improving the quality of life for patients suffering from heart failure and related fluid overload conditions through the commercial expansion of The Aquadex FlexFlow® System. The Aquadex FlexFlow System is a safe, effective, and clinically proven therapy for removing excess sodium and fluid for patients who have failed diuretic therapy.

Chinese Medical Association 840
Beijing, China
The Chinese Medical Association (CMA) is a nonprofit national academic organization in China. It is an important social force in the development of medical science and technology and a linkage between the government and the medical professionals.

ClearFlow 1332
Anaheim, CA
ClearFlow's Mission – Support Best Practices and develop Guidelines to prevent chest tube occlusions. ClearFlow's PleuraFlow ACT System is the only 510K cleared device indicated for the removal of retained blood and the proactive maintenance of chest tube patency after cardiac surgery resulting in improved patient outcomes and lower healthcare costs.

ConMed 1435
Greenwood Village, CO

ConnectMe Solutions 438
Las Vegas, NV

CorMatrix 939
Roswell, GA
CorMatrix Cardiovascular, Inc. is a cardiovascular regenerative medical device company. We are focused on regenerative patient solutions, addressing clinical challenges in the heart failure and structural heart/cardiac valve markets.

CryoLife 925
Kennesaw, GA
CryoLife is a leader in the manufacturing and distribution of medical devices focused on aortic repair; devices include implantable tissue, mechanical heart valves, surgical adhesive, and a comprehensive portfolio of customized surgical and endovascular stents and grafts. CryoLife markets products in over 90 countries. For a complete product listing visit: www.cryolife.com.

CT Assist 604
Philippi, WV
CT Assist is a health care staffing agency for cardiothoracic surgeons, cardiothoracic surgery advanced practitioners, perfusionists and nurses that deliver care in the CVOR, CVICU, and floor. CT Assist provides workforce management solutions including recruiting and locum tenens. We are a nationwide provider cardiothoracic practitioners.

CTSNet 600
Chicago, IL
CTSNet (www.ctsnet.org), headquartered in Chicago, Illinois, USA, is the leading international source of online resources related to cardiothoracic surgery, as well as the major hub of the international online community of cardiothoracic surgeons and allied health care professionals. CTSNet's mission is to "connect the global cardiothoracic community."

CV Staff Solutions 831
Colorado Springs, CO

Designs for Vision 900
Bohemia, NY
Just See It™ with Designs for Vision's lightweight custom-made surgical Telescopes - available with Nike® frames. See It Even Better™ with the L.E.D. Daylite® or Twin Beam®, L.E.D. Daylite® providing the brightest and safest un-tethered illumination. Introducing the L.E.D. Daylite® Nano Cam HD document procedure and HD video from your prospective.

EBM 541
Tokyo, Japan
Biomedical spin-out venture company from Japan. EBM provides original beating heart simulator and quantitative assessment system for OPCAB and vascular anastomosis world wide. Skill assessment is based on rapid CFD technology and validated silicone vascular model.

EchoPixel 328
Santa Clara, CA

The information listed here is accurate as of December 18, 2018. The information for these products and services was provided by the manufacturers, and inclusion in this publication should not be construed as a product endorsement by STS.

TECH-CON EXHIBITOR NEW EXHIBITOR MEETING BULLETIN ADVERTISER

Edwards Lifesciences 613
Irvine, CA
Edwards Lifesciences, based in Irvine, Calif., is the global leader in patient-focused medical innovations for structural heart disease. Driven by a passion to help patients, the company collaborates with the world's leading clinicians to address unmet healthcare needs. For more information, visit www.Edwards.com or @EdwardsLifesci.

Elsevier 903
Philadelphia, PA
Elsevier is the proud publisher of *The Annals of Thoracic Surgery* and a world-leading provider of information solutions that enhance the performance of science, health, and technology professionals. Elsevier empowers better decision making and the delivery of better care. www.elsevier.com

Essential 901
Durham, NC
Essential Pharmaceuticals, LLC is a specialty pharmaceutical company devoted to the development and sales of pharmaceutical products including Custodiol® HTK organ preservation solution. Originally developed for cardiac surgery, Custodiol® HTK offers advantages in heart & abdominal transplant. Histidine acts as a highly effective buffer within the solution.

Etiometry, Inc 827
Boston, MA
Etiometry's FDA cleared predictive analytics software helps clinicians make informed critical care decisions. The patient monitoring software transforms overwhelming data into actionable information for improved care quality and decreased cost. A recent multicenter study linked its use with a 25% decrease in LOS. Please stop by booth #827.

European Association for Cardio-Thoracic Surgery 746
Windsor, United Kingdom
EACTS is the largest European Association devoted to the practice of Cardio-thoracic surgery. The main objective of the Association is to advance education in the field of cardiothoracic surgery and to promote, for the public benefit, research into cardiovascular and thoracic physiology and therapy and to correlate and disseminate the useful results thereof.

European Society of Thoracic Surgeons 653
Exeter, United Kingdom
The largest international general thoracic surgery organization with over 1600 members from all continents. The society's mission is to improve quality in the specialty, from clinical and surgical management of patients to education, training, and credentialing of thoracic surgeons worldwide. 27th European Conference on General Thoracic Surgery, 9 – 12 June 2019, Dublin, Ireland. www.ests.org

Evaheart, Inc 1039
Houston, TX
Evaheart Inc. is a medical device company based in the Houston Texas Medical Center that is bringing the Left Ventricular Assist System known as EVAHEART®2 through clinical trials, regulatory approval, and eventual commercial distribution for the treatment of severe heart failure in patients. Under an FDA IDE, a clinical trial for a Bridge-to-Transplant indication is currently ongoing in the US.

Excell 1334
Las Vegas, NV

Fehling Surgical 517
Acworth, GA
Fehling Surgical Instruments, Inc. is the leader in fine crafted surgical instrumentation that has focused on Cardiovascular Surgery for over 30 years. We feature Minimally Invasive Valve Sets including NEW Retractor designs for unmatched Atrial Exposure of the left Atrium. Our CERAMO and Superplast Instruments specialize in Cardiovascular procedures (Needleholders, Forceps, Clamps and MICS).

General Thoracic Surgical Club 838
Minneapolis, MN
Founded in 1988, the General Thoracic Surgical Club is a not-for-profit organization representing more than 325 general thoracic surgeons worldwide who are dedicated to ensuring the best possible outcomes for surgical procedures of the lung, mediastinum, esophagus, and chest wall by providing the highest quality patient care through education, research, and clinical experience.

Genesee BioMedical 1037
Denver, CO
Design Beyond Standard. Genesee BioMedical, Inc. provides unique devices for cardiac surgery including annuloplasty bands/rings for mitral and tricuspid repair, sternal/thoracic valve retractors, instruments for MICS aortic, TAVI and robotic surgeries as well as coronary graft markers and myocardial needles. Genesee BioMedical, Inc. Denver, CO USA www.geneseebiomedical.com

Getinge 511
Wayne, NJ
Getinge is a leading global provider of innovative solutions for operating rooms, intensive-care units, hospital wards, sterilization departments and for life science companies and institutions. Based on first-hand experience and close partnerships, Getinge offers innovative healthcare solutions that improve every-day life for people, today and tomorrow.

Gore & Associates 641
Flagstaff, AZ
Gore Medical Products Division engineers devices that treat a range of cardiovascular and other health conditions. With more than 40 million medical devices implanted over the course of more than 40 years, Gore builds on its legacy of improving patient outcomes through research, education and quality initiatives. Gore is joined in service with clinicians to improve lives.

Hackensack Meridian Health 1012
Wall, NJ
Hackensack Meridian Health is a leading not-for-profit health care network in New Jersey offering a complete range of medical services, innovative research, and life-enhancing care aiming to serve as a national model for changing and simplifying health care delivery through partnerships with innovative companies and focusing on quality and safety.

Hayes Healthcare 1002
Fort Lauderdale, FL
Hayes Healthcare is a healthcare staffing agency that provides award-winning services to physicians, advanced practitioners, and hospitals. Our dedication to service and laser-focused attention to detail routinely create positive match outcomes.

HCA 1109
Brentwood, TN
HCA owns and operates over 170 hospitals across the United States, which makes us one of the nation's leading providers of healthcare services. We believe exceptional patient outcomes only come through a dedicated community of care, placing our physicians at the forefront.

Heart Hospital Baylor Plano, The 217
Plano, TX
The Heart Hospital Baylor Plano (THHBP) is a cardiovascular specialty hospital in North Texas that opened in 2007. Over the past 10 years, our quality outcomes and guest satisfaction scores have garnered recognition, praise and accolades from international giants in the health care field. Visit TheHeartHospitalBaylor.com to learn more.

Heart Valve Society 752
Beverly, MA
The Heart Valve Society (HVS) "The Heart Team In Action" Save the date for HVS 2019 and join over 400 medial professional and 80 plus industry partners on 11-13 April 2019 in Sitges, Spain! Whether you are a cardiologist, surgeon, researcher or another member of the crucial valve disease treatment team the HVS welcomes you to become a part of something very unique. Membership is available online.

Hospital Information Services for Jehovah's Witnesses (United States) 928
Wallkill, NY
Hospital Information Services for Jehovah's Witnesses - United States is part of an international network that includes 1700 Hospital Liaison Committees in over 110 countries. They are made up of community-based ministers who knowledgeably interact with physicians and hospital personnel to present and share information on nonblood medical management of Jehovah's Witness patients.

Huntsville Hospital Health System 1010
Huntsville, AL
Heart Center at Huntsville Hospital has an Opening for a Thoracic Surgeon! There are currently 6 cardiothoracic surgeons in our group and we are seeking a Thoracic Surgeon to assume the thoracic surgery volume of a retiring surgeon. We currently perform over 850 cardiac surgical cases and approximately 500 thoracic surgical cases each year. Contact Suzanne.lecroix@hhsys.org or 256-265-9639

International Society for Minimally Invasive Cardiothoracic Surgery 750
Beverly, MA
ISMICS: Innovation, Technologies, and Techniques in Cardiothoracic and Cardiovascular/Vascular Surgery

Interpace Diagnostics 909
Parsippany, NJ
Interpace Diagnostics is a public molecular diagnostics company providing specialty molecular tests focused primarily on Thyroid, Esophageal, Pancreatic, and Lung Cancer. The Company's most recently launched product is MVPdx for Lung Cancer, which differentiates local recurrence of cancer versus formation of new primary tumors. Interpace also offers ThyGenX, ThyraMIR, PancraGEN, and BarreGEN.

Intuitive Surgical 1325
Sunnyvale, CA
At Intuitive®, innovating for minimally invasive care is the passion that drives us. Our robotic-assisted da Vinci® Surgical System helps empower doctors and hospitals to make surgery less invasive than an open approach.

JACE Medical 540
Warsaw, IN
JACE Medical is the leader in speed and efficiency with rigid sternal closure applied both pre-sternotomy (Grand Pre®) and post-sternotomy (Low Profile). JACE offers the broadest portfolio on the market providing the thinnest plates and strongest screws for primary, specialty, and reconstruction procedures. For more information, please visit us at Booth 540 and www.jacemed.com.

Johnson & Johnson Medical Devices Companies 1015
New Brunswick, NJ
As the world's most comprehensive medical devices business, we are building on a century of experience, merging science and technology, to shape the future of health and benefit even more people around the world. With our unparalleled breadth, depth and reach across surgery to include Ethicon, NeuWave-Microwave Ablation, DePuy Synthes, we're working to profoundly change the way care is delivered.

Kapp Surgical 536
Cleveland, OH
Kapp Surgical is a custom design shop which designs surgical instruments and implants, manufactures them, and sells as well as distributes domestically and internationally. Kapp's exclusive products are: The Cosgrove Heart Retractor, Strip T's surgical organizer, and countless surgical devices all FDA approved with several pending approval.

Karl Storz Endoscopy 1034
El Segundo, CA
KARL STORZ combines high-quality optics and precision instrumentation for a range of surgical products for thoracic surgery. The VITOM® 3D system provides a revolutionary solution for visualization of microsurgical and open surgical interventions. And, our ENDOCAMELEON® Telescope allows surgeons to adjust viewing directions from 0° to 120° without changing telescopes.

Kinamed, Inc 1005
Camarillo, CA
Visit Kinamed's booth to view a demonstration of the SuperCable®, Polymer Iso-Elastic™ Sternal Closure system, which solves limitations of metal cable, wire and plating systems. SuperCable provides a dual strand footprint which reduces cut-through. It elastically absorbs load & maintains compression. The low profile clasp minimizes palpability, and the polymer cable allows for quick re-entry.

KLS Martin 233
Jacksonville, FL
KLS Martin is a company dedicated to providing innovative medical devices and power systems for craniomaxillofacial surgery. The company began with surgical instrument production in Tuttlingen, Germany in 1896 and continued with miniplate production in 1975. KLS Martin has advanced the capabilities of distraction osteogenesis and revolutionized resorbable fixation with the SonicWeld Rx system.

L&I Med Group 1239
Las Vegas, NV

Laser Engineering/Heart Laser2 1140
Nashville, TN

LifeNet Health 910
Virginia Beach, VA
LifeNet Health helps save lives, restore health, and give hope to thousands of patients each year. We are the world's most trusted provider of transplant solutions, from organ procurement to new innovations in bio-implant technologies and cellular therapies—a leader in the field of regenerative medicine, while always honoring the donors and healthcare professionals that allow the healing process.

LivaNova 1217
Arvada, CO
Sorin Group is a world leader in the treatment of cardiovascular disease. Our innovative product portfolio includes aortic and mitral valve replacement and repair, perfusion equipment, cannula and MICS instruments. For more information visit our web site at www.sorin.com.

LocumTenens.com 1041
Alpharetta, GA
Since 1995, LocumTenens.com has been a leader in placing physicians and advanced practice professionals in short-staffed healthcare facilities. LocumTenens.com also operates the largest job board in the industry, providing access to thousands of jobs, in all medical specialties, for free.

LoupeCam Instruments & Company 326
Scottsdale, AZ
LoupeCam®, Instruments and Company provides innovative HD Cameras for your loupes and lights, cross platform software solutions for Windows, Mac and Mobile Solutions. Recording HD videos has never been so easy! New and Creative instruments, more intuitive than ever. Please visit us @loupecam.com

LSI Solutions 917
Victor, NY
LSI SOLUTIONS® is a medical device company dedicated to advancing minimally invasive therapeutics through research, development, and manufacturing of minimally invasive surgical instruments. Our customer is ultimately a patient. Our technology challenges human illness. Our mission is to lead the world in medical product innovation.

2019 EXHIBITOR MAP

Career Fair
Meet face-to-face with employers at the STS/CTSNet Career Fair. Recruiters will be available to talk about career opportunities; see a list of participating companies on page 11.

Learning Lab Theater
Exhibiting companies and others will present talks and demonstrations. See page 13 for a list of presentations.

Learning Lab Theater 1146

Career Fair

Multipurpose Suite

Multipurpose Suites

KLS Martin 233

Quest Medical Inc 333

Medistim 431

Med Alliance Solutions 425

Medtronic 624

Zimmer Biomet Thoracic 731

Abiomed Inc 725

Peters Surgical 835

CryoLife 925

MedXpert North America 1133

Terumo 1125

LSI Solutions 1347

Intuitive Surgical 1325

The Heart Hospital Baylor Plano 217

Abbott 412

Edwards Lifesciences 613

A & E Medical 817

LSI Solutions 917

Johnson & Johnson Medical Devices Companies 1015

Acute Innovations 1009

HCA 1109

LivaNova 1217

Posters

AtriCure Inc 401

STS 601

ENTRANCE ENTRANCE

Posters
Scientific posters are electronic this year, and several monitors are available for viewing.

Headshots (#602)
Have a professional headshot taken for business or personal use, compliments of STS.

STS Booth (#601)
Hear about the latest the Society has to offer, including member benefits, advocacy efforts, educational courses, e-learning modules, the STS Research Center, and the STS National Database.

STS Exhibit Hall Hours

Monday 9:00 a.m. – 4:30 p.m. | **Tuesday** 9:00 a.m. – 1:30 p.m.

TECH-CON EXHIBITOR NEW EXHIBITOR MEETING BULLETIN ADVERTISER

M Clinic LLC 1041
Las Vegas, NV

Med Alliance Solutions 425
Sycamore, IL
ISO 13485 certified medical device distributor committed to providing high quality specialty devices for cardiothoracic surgery worldwide. Exclusive US distributor of French instruments manufacturer Delacroix-Chevalier and operational partner of Michigan based Surge Cardiovascular for open heart surgical products.

Med Care Pharmaceuticals 309
Beverly Hills, CA

Medela AG 1233
McHenry, IL
Medela concentrates on two business units: "Human Milk", with basic research recognised globally and leading in the development and manufacture of breastfeeding products and solutions, and "Healthcare", engineering and manufacturing highly innovative medical vacuum technology solutions.

Medistim 431
Plymouth, MN
Medistim is the market leader in intraoperative ultrasonic guidance and quality assessment focused on improving surgical outcomes. With the MiraQ™ platform, Medistim offers the unique combination of transit time flow measurement (TTFM) and high-frequency ultrasound imaging. This technology enables surgeons to execute necessary corrections while the patient is still in the operating room.

Medtronic 624
Minneapolis, MN
As a global leader in medical technology, services and solutions, Medtronic improves the lives and health of millions of people each year. We use our deep clinical, therapeutic and economic expertise to address the complex challenges faced by healthcare systems today. Let's take healthcare Further, Together. Learn more at Medtronic.com.

MedXpert North America 1133
Edmond, OK
MedXpert North America, LLC is a producer of medical devices (implants and instruments) specialized on all kind of procedures in the thoracic part of the human body. We produce StraTos for three different indications (deformity, reconstruction after tumor resection as well as trauma) and StraCos for two indications (trauma and reconstruction).

Microsurgery Instruments, Inc 1003
Bellaire, TX
Microsurgery Instruments is one of the leading suppliers of surgical instruments and loupes. Our instruments include: titanium scissors, needle holders, and debakey forceps. Our Super-Cut scissors are the sharpest in the market, and our newly designed surgical loupes offer up to 130mm field of view, and up to 11x magnification.

MY Bio 937
Las Vegas, NV

Nadia International 606
Austin, TX
Educational/Surgical bronze sculptures for the Thoracic Surgeon. Museum quality limited editions are created by the world famous sculptor, Ronadro' who has over 7500 surgeons in 77 countries collecting his fine works of art.

Nova Biomedical 836
Waltham, MA

NZG Expo Services 908
San Diego, CA

Olympus America, Inc 616
Center Valley, PA
Olympus Medical Systems Group develops solutions for healthcare professionals that help improve clinical outcomes, reduce overall costs and enhance quality of life for their patients. By enabling less invasive procedures, innovative diagnostic and therapeutic endoscopy, and early stage lung cancer evaluation and treatments, Olympus is transforming the future of healthcare.

Otto Trading Inc 1200
Santa Ana, CA

Owensboro Health Regional Hospital 902
Owensboro, KY

Paragonix Technologies, Inc 924
Braintree, MA
Paragonix SherpaPak™ Cardiac Transport System (CTS) safeguards hearts during the journey from donor to patient.Our device incorporates clinically proven / medically trusted cold preservation techniques in a novel suspension system to provide unprecedented physical and thermal protection.Paragonix SherpaPak™ CTS is the only commercially available FDA cleared medical device for heart transportation.

Peters Surgical 835
Plymouth, MA
Vitalitec Geister will be displaying all our products, highlighting our Peters CV Suture, Enclose II Anastomosis Assist Device, Cygnet Flexible Clamps, Intrack Atraumatic Temporary Clamps and Inserts and Geister ValveGate and ValveGate PRO line

Philips 1240, 1242
Best, Netherlands
At Philips, we partner with our customers to transform the delivery of healthcare and enable better care at lower cost. Building on our long heritage in Interventional Oncology, we introduced Lung suite to enable definitive diagnosis of (early stage) lung cancer and minimal invasive thoracic treatment in the same room.

Pinnacle Biologics 1141
Chicago, IL
Pinnacle Biologics delivers photodynamic therapy (PDT) to patients through its line of products. By administering an FDA approved biopharmaceutical drug that is selectively retained in tumors and activated by an FDA approved laser light, PDT can eradicate tumor cells. The two primary uses for Pinnacle's drug include the treatment of esophageal cancer and of non-small cell cancer (NSCLC).

Posthorax, Inc 930
Clearwater, FL
Posthorax is a company that seeks to enhance heart-surgery patient's recovery from start to finish by providing our sternum support vest. We 12 have clinical trials with more than 10,000 patients included, proving the effectiveness of our sternum support vest.

Presbyterian Healthcare Services 1042
Albuquerque, NM

Provider Solutions + Development (aka Providence SJH) 1101
Seattle, WA
Founded within Providence St. Joseph Health, Provider Solutions + Development is a clinical career navigation organization. We've helped thousands of physicians and providers achieve their practice potential. Our growing network of health system partners offers diverse practice opportunities across the nation.

Qualiteam s.r.l. 1335
Chiaverano, Italy
Qualiteam designs products to improve postoperative recovery. Our dual-function sternum and breast supports are unlike any other. They comfortably protect the internal closure from the outside day and night and effectively assist the healing sternum to decrease sternal infections, pain and pulmonary complications which ultimately decreases health care costs.

Quest Medical, Inc 333
Allen, TX
Quest Medical, Inc. is a medical device manufacturer and worldwide distributor specializing in protecting the heart during cardiac surgery with the Quest MPS 2® and Microplegia. Quest also offers a unique variety of aortic punches, safety valves, vascular loops, and an anesthesia line designed for optimum cardiovascular surgery.

R&D Surgical USA, Inc 1139
Austin, TX
R&D Surgical USA / Xenosys USA serve the cardiac, thoracic, and vascular community with innovative products - portable next-generation LED surgical headlight offering freedom and convenience at less than 1oz weight. - a full range of custom surgical loupes giving an unbeatable field of vision, and depth of focus, all while being light and comfortable. - Xenosys wireless HD surgical camera system

Regional Data Managers: STS National Database 1317
Ann Arbor, MI
The Regional Data Manager exhibit provides opportunities for Surgeons to interact with Data Managers from around the country who are actively involved with STS Regional Database efforts and collaborative STS groups. Come learn about regional activities and initiatives!

Ronin Surgical 829
Los Angeles, CA
Ronin Surgical: makers of the X5 Surgical Headlight System. The wireless X5 is the lightest, brightest, longest-running operating room surgical headlight on the market. Schedule your free trial or reserve your mission trip loaner today at +1.415.226.9414 or Contact@RoninSurgical.com. Ronin Surgical – Designed Without Compromise. www.RoninSurgical.com

Royal Caviar 325
Las Vegas, NV

Rultract/Pemco, Inc 505
Cleveland, OH
Rultract Skyhook retractor provides gentle, uniform lift allowing maximum exposure for IMA dissection, re-do hearts, xiphoid entry, subxiphoid pericardial procedures, minimally invasive procedures, parasternal procedures, Pectus, LVAD Extraction, and others. Pemco Inc. is the only authorized service center and OEM for Rultract. Ensure that your Rultract is serviced every 12-18 months by Pemco.

Saphena Medical 1043
West Bridgewater, MA
The Venapax® Endoscopic Vessel Harvesting System allows for accurate vein dissection and branch ligation all built into a single device. Venapax offers a gentle harvesting approach without the need to excessively manipulate the target vessel. Well-engineered bipolar cautery combined with proprietary electrodes optimized specifically for EVH produces high burst strength, minimal thermal spread and long branch lengths.

Scanlan International 801
St. Paul, MN
Highest quality surgical products designed and manufactured by the Scanlan family since 1921. Over 3000 titanium&stainless steel surgical instruments including SCANLAN®Super Cut™ &Premier™Scissors, SCANLAN®Legacy Needle Holders & Forceps, Memory Dilators/ Probes, New VATS SCANLAN® Dennis Rib Cutter & Rocco Nodule Clamps. SCANLAN® Single-Use Products.

Sherwood Group 1204
Brooklyn, NY

Society of Thoracic Surgeons, The 601
Chicago, IL
STS represents more than 7,400 surgeons, researchers, and allied health care professionals worldwide who are dedicated to ensuring the best possible outcomes for surgeries of the heart, lung, and esophagus, as well as other surgical procedures within the chest. At the booth, learn about member benefits, advocacy efforts (including STS-PAC), opportunities to participate in the STS National Database and publicly report outcomes, and cutting-edge research being conducted via the STS Research Center. You also can donate to The Thoracic Surgery Foundation, the Society's charitable arm, and get advice from *The Annals of Thoracic Surgery* staff on submitting your manuscript.

Sontec Instruments 501
Centennial, CO
Sontec offers headlights and loupes and the most comprehensive selection of exceptional hand held surgical instruments available to the discriminating surgeon. There is no substitute for quality, expertise and individualized service. Sontec's vast array awaits your consideration at our booth.

Staff Care 1235
Dallas, TX
Staff Care is an AMN Healthcare company that provides locum tenens recruitment and staffing services. We match physicians, as well as other healthcare professionals, including dentists, CRNAs, nurse practitioners and physician assistants, with all types of medical facilities and healthcare organizations.

Summit International Medical Technologies 1238
Franklin, MA
Summit introduces the SternaSafe Uni, a new 2-way sternal support operating system. Easy to handle, comfortable sternum support brace suitable for every patient. Better Support, Faster Recovery, More Comfort. Also Introducing the SternaBra for female sternal support.

SurgiTel/General Scientific Corp 301
Ann Arbor, MI
SurgiTel is the manufacturer of premium loupes and headlights sold around the world from their headquarters in Ann Arbor, Michigan. Holding a variety of patents SurgiTel is always on the forefront of Vision and Ergonomics.

SynCardia Systems, LLC 737
Tucson, AZ
The SynCardia temporary Total Artificial Heart (TAH-t) is the world's only FDA, Health Canada and CE approved Total Artificial Heart. It is approved as a bridge to transplant for patients dying from end-stage biventricular failure. Visit our booth for updates on the 50cc TAH-t and destination therapy.

Talis Clinical 1103
Streetsboro, OH
Talis Clinical was formed to meet the higher

Meet With Top Employers

The STS/CTSNet Career Fair gives attendees the chance to meet face-to-face with employers. Recruiters will be available to talk with potential candidates about career opportunities. The Career Fair will be held in the Exhibit Hall.

Monday	9:00 a.m. – 4:30 p.m.
Tuesday	9:00 a.m. – 1:30 p.m.

Atrium Health – Booth #650
Carle Health System – Booth #549
Emory Healthcare – Booth #547
Memorial Healthcare System – Booth #550
Munson Healthcare – Booth #544
Sanford Health – Booth #648
Sparrow Health System – Booth #551
St. Bernards Medical Center – Booth #546
St. Elizabeth Healthcare – Booth #646
STS/CTSNet Career Center – Booth #644
Tenet Healthcare – Booth #545
TriHealth – Booth #548

Note: This list of employers is accurate as of January 7, 2019.

TECH-CON EXHIBITOR NEW EXHIBITOR MEETING BULLETIN ADVERTISER

purpose of supporting safe patient care and positively impact clinicians and providers. Our ACG-Perfusion™ PIMS technology was developed for the #1 Cardiac Hospital in the world to advance the standard of cardiac care.

Terumo 1125
Ann Arbor, MI
Terumo will display the VirtuoSaph® Plus Endoscoipc Vessel Harvesting System, Beating Heart and Surgical Stabilization products, Terumo® Perfusion Products, and new data management solutions. Terumo Aortic will display the most comprehensive portfolio of products in the aortic space - providing solutions that meet the global needs of clinicians.

Thompson Surgical 411
Traverse City, MI
Thompson Surgical is a leader in exposure and the original manufacturer of the table-mounted Thompson Retractor. Cardiovascular surgeons will benefit from the Thompson Bolling Retractor. The Bolling Retractor provides extremely low profile, stable, and Uncompromised Exposure of the heart structures for valve procedures. “Set it and forget it.” - Steven Bolling, MD

Transonic 941
Ithaca, NY
Transonic is the original inventor and innovator of transit-time flow measurement devices for CABG surgery, CHD Repair, CPB and ECMO cases. For over 33 years, Transonic flow measurement systems have been used to advance physiologic understanding as well as to provide surgeons with peace of mind that their anastomoses are patent prior to closure.

Veran Medical Technologies 1213
St. Louis, MO
Veran is a privately held medical device company headquartered in St. Louis, MO. The company’s main focus is assisting physicians in the early diagnosis and treatment of lung cancer. Veran has developed and commercialized an FDA cleared, next generation electromagnetic navigation platform called the SPiN Thoracic Navigation System, which includes both endobronchial and transthoracic approaches.

Vitalcor, Inc 811
Westmont, IL
Vitalcor, Inc. is a supplier of medical devices used primarily in Cardio-Thoracic Surgery. Since 1975, Vitalcor has provided products that take input from teaching and practicing surgeons to make their practice easier. We pride ourselves on offering quality products and providing exceptional customer service.

Weatherby Healthcare 1104
Fort Lauderdale, FL
Since 1995, Weatherby Healthcare has established itself as an expert in locum tenens staffing for physicians, physician assistants, and nurse practitioners. The company employs nearly 600 employees committed to filling locum tenens assignments in large-scale healthcare networks, hospitals, and clinics nationwide. Learn more at weatherbyhealthcare.com.

WebMD and Vitals.com 428
El Segundo, CA
WebMD and Vitals.com comprise the #1 online source for finding doctors. The directories generate 14M monthly visits. Providers utilize Enhanced Profiles to earn top search results and competitive placement.

Western Thoracic Surgical Association 748
Beverly, MA
The Western Thoracic Surgical Association is an organization of cardiothoracic surgeons from 13 western states and 4 western provinces of Canada, whose one-of-a-kind meeting combines first rate scientific papers along with family-oriented activities. Please join us June 26-29, 2019 at Squaw Creek at Lake Tahoe in Olympic Valley, California.

Wexler Surgical, Inc 400
Houston, TX
Wexler Surgical designs and manufactures a variety of titanium and stainless steel specialty surgical instruments and products for Cardiac, Vascular, Thoracic, and Micro Surgery. Come see our VATS/MICS instruments and ask about our Optimus Series. Visit us online at www.wexlersurgical.com for more information about our products and services or email us at sales@wexlersurgical.com!

Wolters Kluwer 300
Philadelphia, PA
Wolters Kluwer Health is a leading global provider of information and point of care solutions for the healthcare industry. Our solutions are designed to help professionals build clinical competency and improve practice so that healthcare organizations can succeed in value-based care delivery models. Product solutions include Lippincott, Ovid®, and UpToDate®

Zimmer Biomet Thoracic 731
Jacksonville, FL
Founded in 1927 and headquartered in Warsaw, Indiana, Zimmer Biomet is a global leader in musculoskeletal healthcare. We design, manufacture and market a comprehensive portfolio of innovative Thoracic products and treatment solutions for surgeons and patients including, the RibFix™ Blu Thoracic Fixation System and the SternaLock® Blu Primary Closure System.

ZipLine Medical, Inc 1241
Campbell, CA
ZipLine Medical offers surgical (Zip Surgical Skin Closure) and chronic (PreLoc Wound Closure) solutions based on proven, non-invasive force distribution technology. Published clinical studies have demonstrated superior clinical and economic benefits vs. standard of care, including shorter procedure time, fewer wound-related complications and readmissions, and fewer post-operative provider visits.

ZipperBelt 324
Dallas, TX

Search Continues for Optimal Approach for Type A Aortic Dissections

The continuing evolution and improvement of procedures to repair type A aortic dissections is leaving cardiothoracic surgeons with more questions than firm answers as they plan what is typically an emergency repair.

"We now have several different reconstructive options for type A dissections, and we're trying to figure out the optimal choice on both sides of the Atlantic," said STS Past President Joseph E. Bavaria, MD, of the Hospital of the University of Pennsylvania in Philadelphia. "European surgeons have had access to some devices we don't have in the United States because of differences in approval processes, but the decision-making process is the same for all of us."

EACTS @ STS: Which Arch Operation Should I Do?

Decision-Making During Type A Dissection Repair

Monday

7:15 a.m. – 9:15 a.m.

Room 33

A session organized by STS and the European Association for Cardio-Thoracic Surgery will help cardiothoracic surgeons learn the best approaches to repairing type A dissections regardless of where they practice. The session will be moderated by Dr. Bavaria and EACTS President Ruggero De Paulis, MD, of the European Hospital in Rome.

Presenters from the United States and Europe will address four key questions:

- Where does the now-classic hemiarch procedure fit into current treatment algorithms?
- Does the total arch procedure have a place in today's surgical armamentarium?
- Under what circumstances should a total arch with frozen elephant trunk be used?
- Is it appropriate to change the index procedure at the aortic arch based on the development of branched arch thoracic endovascular aortic repair (TEVAR) grafts?

Joseph E. Bavaria, MD

"Advancing technology has brought us to an inflection point," Dr. Bavaria said. "We have a standard approach, and we have the real possibility that the standard isn't good enough any longer given today's devices and procedures. We will go through each approach, analyze where it can best be utilized, and determine whether it can be utilized in all patients or if it is more appropriate for a specific subpopulation."

The most important question in the long term is the application of evolving TEVAR technology. Both single-branch and two-branched arch grafts currently are available in clinical trial, and newer generations of grafts are under development. Surgeons are seeing the potential for not just improving survival from type A dissection repairs, but providing definitive treatment. Whether TEVAR becomes the new index approach today or at some future point, every cardiothoracic surgeon should be aware of its potential.

"A lot of changes have happened in the last few years, and more are coming in the near future," Dr. Bavaria said. "If treatment of type A dissections is part of your practice, this session will allow you to provide your patients with optimal care." ■

> "Advancing technology has brought us to an inflection point. We have a standard approach, and we have the real possibility that the standard isn't good enough any longer given today's devices and procedures."
>
> **JOSEPH E. BAVARIA, MD**

Presenters Meet the Media

The Society will host a press conference on Monday highlighting some of the exciting research being presented at the STS 55th Annual Meeting. The press conference will take place at 12:30 p.m. in Room 27B and feature:

Transplanting Pig Hearts into Sick Babies May Be Promising Temporary Treatment Option
Speaker: David C. Cleveland, MD, University of Alabama Health Services Foundation, Birmingham
Discussant: Carl L. Backer, MD, Ann & Robert H. Lurie Children's Hospital of Chicago, Illinois

Reusing Patient's Own Blood During Heart Surgery May Improve Outcomes
Speaker: Eric Zimmermann, MD, Oregon Health and Science University, Portland
Discussant: Gabriel S. Aldea, MD, University of Washington Medical Center, Seattle

Lung Cancer Surgery Patients May Reap Benefits of Larger, More Centralized Hospitals
Speaker: Jeffrey B. Velotta, MD, Kaiser Permanente Oakland Medical Center and the University of California San Francisco School of Medicine
Discussant: Leah M. Backhus, MD, Stanford University, California

Claim Continuing Medical Education Credit

The STS 55th Annual Meeting utilizes an entirely electronic evaluation and CME/Perfusion CEU credit claim process. Both physicians and perfusionists can use this system to claim credit, complete evaluations, and print CME/Perfusion CEU certificates. Certificates of Attendance also are available for other attendees and international physicians not wishing to claim CME/Perfusion CEU credit. Attendees will not be able to evaluate and claim CME/Perfusion CEU credit for ticketed sessions unless they have registered for those sessions. *Please note that CME credit is not available for the Residents Symposium, Residents Luncheon, or Tech-Con 2019.*

Attendees can complete evaluations by clicking on the Credit/Evaluation button on the STS Meetings mobile app, going to **sts.org/2019evaluation**, or visiting computer stations located on the upper level near Ballroom 20 and on the lower level near Registration. In order to make this process more convenient for attendees, the meeting evaluations will be available through Friday, February 15.

Attendees can log in to the website with the following information:

Username: 6-digit STS member ID number printed on their meeting badge

Password: First initial and last name

Learning Opportunities in the Exhibit Hall

Exhibiting companies and others will present talks and demonstrations in the Learning Lab Theater, located in the Exhibit Hall.

MONDAY

10:30 a.m. – 11:00 a.m.
AngioDynamics
AngioVac in the Right Heart: A Physician's Perspective

12:30 p.m. – 1:00 p.m.
Philips
Early Experience with Cone Beam CT-Guided Endobronchial Microwave Ablation for Inoperable Lung Cancer

3:30 p.m. – 4:00 p.m.
Medtronic
It's Time to Make a Lateral Move: Less-Invasive HVAD Implantation

TUESDAY

9:00 a.m. – 9:30 a.m.
Johnson & Johnson Medical Devices Companies
How Will Emerging Technologies in Lung Intervention and Evidence Change Your Practice?

12:15 p.m. – 12:45 p.m.
Philips
Same-Day Diagnosis and Treatment with iVATS in the Hybrid OR

This list is accurate as of January 27, 2019.

Born to stand out.

At Terumo Aortic, we understand that no two aortas are alike. We are 100% focused on the aorta, from the arch to the iliacs. With a comprehensive surgical, endovascular and hybrid portfolio* of individualised and off-the-shelf solutions, we help you address your patients' unique challenges — so no patient is left behind.

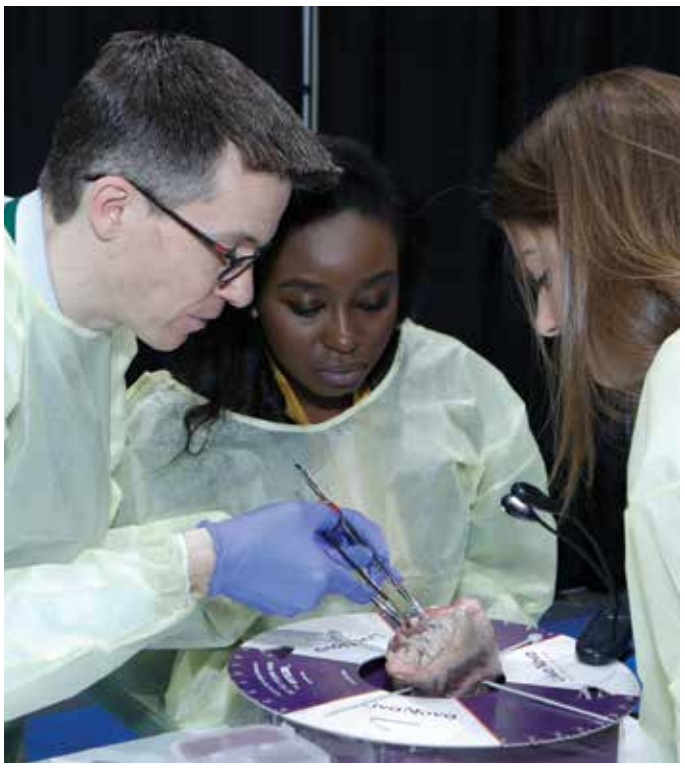
Visit us at STS, booth number 1125,
January 27-29 in San Diego, to learn how we are delivering individualised solutions for every segment of every aorta.

TERUMO Aortic

* Hybrid portfolio does not currently include custom configurations

Photo Gallery

The STS 55th Annual Meeting got off to a great start this weekend. On Saturday, Tech-Con previewed the latest technology in development. On Sunday, attendees gained hands-on experience at STS University, symposia were held on a wide variety of topics, and the Exhibit Hall opened.



Recording Policy

Recording of STS 55th Annual Meeting sessions is strictly prohibited, except by authorized personnel. ■

Free Wi-Fi Available

Complimentary wireless internet is available in the common areas and meeting rooms of the convention center for all Annual Meeting attendees. To connect, select **STS2019** from the available networks. ■

‘Shark Tank’ Takes Aim at Unmet Surgical Needs

The cardiothoracic device market has grown dramatically in recent years, but unmet needs persist. Four physician-inventors aiming to tap the burgeoning market pitched their cutting-edge devices during “Shark Tank,” part of the Tech-Con Joint Session: The Future of Cardiothoracic Surgery.

Syed T. Raza, MD, of Columbia University Medical Center in New York, opened the pitch session with a stapler to create rapid and leakproof aortic anastomoses in patients with acute Type A aortic dissections. Conventional hand-sewn anastomoses are prone to bleeding.

Dr. Raza’s solution is a round stapler that joins native vessel and graft with two rows of 30 staples. The stapler can be handheld or fitted to a robotic arm.

Grayson H. Wheatley, MD, of TriStar Centennial Medical Center in Nashville, and Daniela Molena, MD, of Memorial Sloan Kettering Cancer Center in New York, were the sharks assessing the pitches. Dr. Wheatley said that he liked the novel idea. So did the audience, with 61% voting to fund development.

Jeffrey R. Gohean, MSME, of Windmill Cardiovascular Systems in Austin, TX, pitched a two-piston toroidal pulsatile flow VAD. The gentle pulsatile flow exerts low shear force, resulting in minimal blood trauma and platelet activation, which are responsible for the high rates of adverse events seen with conventional continuous-flow VADs. Preclinical trials show acute and long-term benefits and no thrombus formation without anticoagulation therapy.

Dr. Molena praised the novel approach while 78% of the audience voted to fund the project.

Usman Ahmad, MD, of the Cleveland Clinic, pitched ThoraStim, an implantable neurostimulator for pain management following cardiac surgery. The ThoraStim electrode is implanted along the intercostal nerve and protrudes slightly above the skin. Once the need for pain control has passed, the device is removed as easily as a chest tube.

Dr. Wheatley found the concept appealing, but said that human trial data are needed. The audience agreed, with 57% voting to fund the venture.

Faiz Y. Bhora, MD, of Mount Sinai Hospital in New York, pitched Tracheomend, a 3D printed artificial trachea. The printed trachea scaffold is wrapped in a biologic membrane impregnated with a “secret sauce” of homing molecules to attract epithelial and stem cells, which implant and grow to create a biologically competent trachea.

An intriguing idea, Dr. Molena suggested, but not ready for prime time. The audience agreed, with 57% voting to not fund the venture. ■

Cardiac and Vascular Surgeons Can Learn From Each Other

More and more often, cardiac and vascular surgeons are seeing the same patients and dealing with similar challenges, making a collaborative approach essential to optimizing outcomes.


Keith B. Allen, MD

"Cardiac surgeons and vascular surgeons have very different training and tools in their armamentariums," said Keith B. Allen, MD, of St. Luke's Mid America Heart Institute in Kansas City, MO. "It's important for both types of specialists to expand their horizons and understand what strategies the other uses."

Dr. Allen will co-moderate today's session planned by STS and the Society for Vascular Surgery, which will outline common areas where surgeons should approach patient care collaboratively, considering all options at their disposal.

One example is vascular access. The use of transcatheter procedures has increased with expanding indications for endovascular devices. The size of some of these devices adds to the challenge of vascular access.

"The devices are getting smaller, but cardiac surgeons must be creative and think outside the box when femoral access is not available," Dr. Allen said. "There is a continued need for alternate options for individuals with inadequate iliofemoral vessels."

Historically, alternate options have included transapical and direct aortic approaches, but Dr. Allen noted that these choices have lost ground to minimally invasive strategies. He recommends that both cardiac and vascular surgeons have a working knowledge of less invasive approaches such as carotid, transcaval, axillary, and subclavian access.

Pulmonary embolism (PE) is another area in which the perspectives of both specialties are necessary. Acute PE is the third-leading cause of cardiovascular death in the United States, with an estimated 100,000 deaths each year. Among the challenges of PE are that it is often difficult to diagnose, clinical trial data are inadequate for evidence-based recommendations, and guidelines offer different risk stratification classifications.

Many clinicians need a greater understanding of guidelines for management of PE, Dr. Allen noted, and many institutions have yet to establish a PE team.

"In some institutions, care is provided in a piecemeal manner. There is no team or plan, or clinicians do not understand the distinctions among submassive, massive, and minor PE," said Dr. Allen. "Clinicians should know how to diagnose different types of PE and understand the potential therapies—catheter-based procedures, surgery, and medical therapy. The most important point is to have a team and implement it."

This session will outline how to organize a PE team, triage according to type of PE, and select appropriate therapy in individual cases. ■

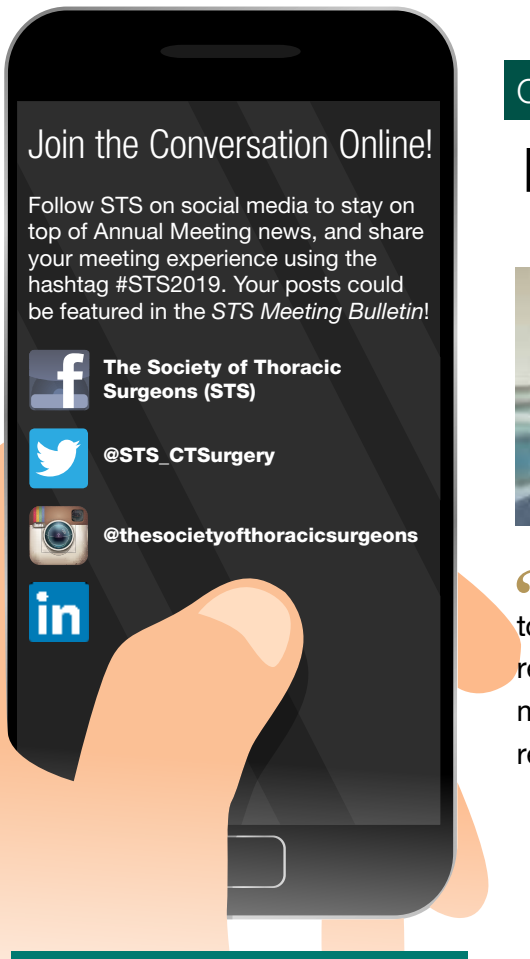
> "Cardiac surgeons and vascular surgeons have very different training and tools in their armamentariums. It's important for both types of specialists to expand their horizons and understand what strategies the other uses."
>
> KEITH B. ALLEN, MD

SVS @ STS: Sharing Common Ground for Cardiovascular Problems

Monday

1:15 p.m. – 3:15 p.m.

Room 31C



QUESTION OF THE DAY

What have you learned that you can take back home with you?

DEON VIGILANCE, MBA, MD
Philadelphia, PA

"The biggest thing I've gotten today was about mitral valve repair. In one of the videos this morning, I learned a technique for repair that I can use right away."

HESHAM SHAWKEY, MD
Cairo, Egypt

"In the critical care symposium, they were discussing management of cardiac arrest in post open heart. They all agreed that early reopening of the sternum is the best method. There also was a a lot of talk about the alternatives to heparin, using other drugs, which will be very useful."

AHMED EL-KERDANY, MD
Cairo, Egypt

"In the morning, I attended the session on congenital heart about how to deal with the patient in different scenarios. That will be helpful as soon as I return."

STAY CONNECTED

Instagram

TODAY'S TOP TWEETS #STS2019

Admittedly, the **#STS2019 @STS_CTsurgery** conference bags are the best I've ever had/seen so far. Thrilled to be here, starting off with half a day of **#ACHD. #globalcardiacsurgery**

@DVervoort94

Opioid epidemic is a national emergency - creative minds like **@UsmanAhmadMD** from **@CleClinicMD** are developing better ways to treat pain like this novel neuromodulation system placed robotically for post Cardiothoracic surgery pain presented today at **#STS2019**

@EricRoselliMD

#STS2019 The meeting app is awesome!! No need to carry paper around.

@DHollingsMD

Dr. **@BrentKeeling** on early career development: 1. Plan 2. Establish your reputation 3. You are a leader, act like it 4. Conduct yourself accordingly 5. Take on responsibilities 6. Be careful 7. Know the rules and follow them **#sts2019 #tssmn @STS_CTsurgery #ctcareers**

@JessicaLuc1

Great Bronchoscopy session co-sponsored by CHEST **@accpchest** and STS at STS aan-ual meeting in San Diego **#STS2019**. Loved the lively discussion on lung cancer staging and role of **#EBUS** vs. Mediastinoscopy. Wonderful partnership between thoracic surgery and pulmonary

@Int_Pulmonology

Tech-Con ✓Honored to learn from brilliant innovators who are constantly thinking outside of the box and creating the future of our field **#sts2019 @tomcnguyen**

@thestephnguyen2

DISCOVER GAME-CHANGING FLOW† FOR ECMO

NEW

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Jugular Dual Lumen Catheter

The Crescent catheter is the first FDA-cleared, jugular dual lumen long-term ECMO catheter. It allows for more accurate placement with just one cannulation site, delivers enhanced flow dynamics, and helps maintain optimal flow once placed.

Available for sale in the United States only

Stop by our booth to see the Crescent catheter in all five sizes.

†Bench and animal data on file at MC3 (200769), 21CFR870.4100

medtronic.com/Crescent

IMPORTANT SAFETY INFORMATION

Care and caution should be taken to avoid damage to vessels and cardiac tissue during cannulation or other cardiac surgery procedures. For a listing of indications, contraindications, precautions, warnings, and potential adverse events, please refer to the Instructions for Use.

Caution: Federal law (USA) restricts this device to sale by or on the order of a physician.

Crescent™* Jugular Dual Lumen Catheter is manufactured by MC3, Inc. and exclusively distributed by Medtronic.

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Medtronic
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40 years of collaborative innovation
1 shared goal: advancing patient care

Getinge, at the heart of the CABG patient

For more than 40 years we have shared your goal of advancing coronary artery bypass graft (CABG) surgery, the standard of care for revascularization of patients with coronary artery disease[1]. The CABG patient of today presents new challenges and has specific resource requirements, from pre-operative stabilization to intra-operative treatment and post-operative recovery.

Explore how we can help you provide the best care for today's CABG patient.

Join us at Booth 511

1. *European Heart Journal*, Volume 34, Issue 37, 1 October 2013, Pages 2862–2872, https://academic.oup.com/eurheartj/article/34/37/2862/503604.

Explore by scanning the QR code or visit **getinge.com/cabg**

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