

STS MEETING BULLETIN

THE SOCIETY OF THORACIC SURGEONS **53RD ANNUAL MEETING** HOUSTON, TEXAS | sts.org

MONDAY

6:30 a.m. - 5:00 p.m. Registration Room 360 Lobby

9:00 a.m. - 4:30 p.m. Exhibit Hall Exhibit Hall A3 Scientific Posters Hall B3

7:00 a.m. - 7:15 a.m. **Opening Remarks** Grand Ballroom

7:15 a.m. – 8:15 a.m. J. Maxwell Chamberlain Memorial Papers Grand Ballroom

8:15 a.m. - 9:00 a.m. Richard E. Clark Memorial Papers Grand Ballroom

9:40 a.m. - 9:50 a.m. Introduction of the President: Richard L. Prager Grand Ballroom

9:50 a.m. - 10:50 a.m. Presidential Address: Joseph E. Bavaria Grand Ballroom

11:30 a.m. - 12:30 p.m. Adult Cardiac: Arrhythmia Room 310ABC Basic Science Research: Adult Cardiac

Room 350DEF Basic Science Research: General Thoracic Room 361A

Congenital: Adult Congenital Room 360BC

Critical Care

Room 330AB

Ethics Debate: When a Child's Heart Is Failing Room 362A

General Thoracic: New Technology Room 361BC

Late-Breaking Abstracts I Room 320ABC

STS Key Contacts: How to Become an Advocate for Cardiothoracic Surgery Room 360A

STS/CATS/CSCS: Quality Improvement in Cardiothoracic Surgery-Real-Life Methods to Improve Surgical Performance Within Yourself, Your Division, and Your Specialty Room 351DEF

1·15 n m – 5·15 n m

ACC @ STS: Cardiologists and Surgeons Tackling Complex Clinical Scenarios as a Heart Team Room 330AB

Redefining Practice Through Quality and Evidence: What's New Room 351DEF

1:30 p.m. – 3:30 p.m.

Adult Cardiac: Aorta I Room 310ABC

New Data Released on Heater-Cooler Device Infections

nnual Meeting attendees crowded into a packed 7:00 a.m. session yesterday to hear about newly revealed research regarding a critical patient safety issue. Over the last few years, a growing number of serious infections have been linked to bacteria forming in heater-cooler devices (HCDs) used in cardiac surgery operating rooms. In these cases, aerosolized bacteria, predominantly nontuberculous mycobacterium (NTM) from the HCDs, contaminated the operative field. Emerging evidence regarding the incidence and challenges of detecting the infections has triggered alarms at the US Food and Drug Administration and regulatory agencies in Europe.

The latest update on the threat of NTM was presented Sunday by cardiothoracic surgeons and experts in perfusion and infectious diseases during a special session, "Heater-Cooler-Induced Infections: Practices, Protocols, and Mitigation Strategies."

'We are just beginning to scratch the surface, even though this research has been

going on for more than 2 years," said Keith



B. Allen, MD, of St. Luke's Mid American Heart Institute and the University of Missouri-Kansas City, the lead author of an abstract focusing on the problem. He has worked with other experts at the request of the FDA, which organized a special conference last summer to address the problem.

The infections associated with HCDs have a latency period of up to 72 months, with a

A session on infections caused by bacteria in heater-cooler devices drew a large crowd Sunday.

MONDAY | JAN. 23, 2017

mean time of 17 months from surgery to onset of symptoms, said Neil Fishman, MD, an infectious disease expert at the University of Pennsylvania Perelman School of Medicine in Philadelphia.

The incidence of infections has been tracked in the Medical Device Report database, which collects reports from manufacturers, see HEATER-COOLER, page 17

Devices Draw Mixed Reviews in Tech-Con's Shark Tank



Shanda H. Blackmon, MD, MPH explains the benefits of using the Blackmon-Mayo Buttressing Anastomotic Device to Shark Tank judges Saturday.

nventors tend to be optimists, perceiving their ideas as game-changers when the reality often is far different. Three physician-inventors of medical devices got a dose of reality Saturday by diving into STS/AATS Tech-Con's Shark Tank, where peers judged their developments.

For two device developers, the news was good, while the third may be headed back to the drawing board, based on the comments of two judges and attendee polling results during "Shark Tank—Rapid-Fire Elevator Pitches of Revolutionary Thinking." The "sharks" judging the devices were Patrick M. McCarthy, MD, of Chicago, and Rick Anderson, of PTV Healthcare Capital in Austin, Tex.

First up in pitching a development was Shanda H. Blackmon, MD, MPH, of the Mayo Clinic in Rochester, Minn., who presented

Don't Miss Today's Presidential Address Quality and Innovation in Cardiothoracic Surgery: Colliding Imperatives? Joseph E. Bavaria, MD 9:50 a.m. - 10:50 a.m., Grand Ballroom

the Blackmon-Mayo Buttressing Anastomotic Device, designed to prevent anastomotic leaks. It is used during an esophagectomy, after the stomach is pulled into the chest.

The device is a mandrel that is introduced through the mouth and goes down the esophagus, exiting the distal portion of the esophagus. Inside the device is a selfexpanding stent or mesh. The mandrel has LED lights that improve visibility and is moved into four positions where the stomach and esophagus are attached to the stent or mesh using T-fasteners.

"This allows coverage with overlap of the two structures you are joining, rather than creating an end-to-end anastomosis, so if there is a small leak, it is covered by an internal buttress," Dr. Blackmon said.

In a texting poll, 43% of the audience said they were interested in investing, 33% said they would "possibly invest," but would not be see SHARK TANK, page 21



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LET'S CHANGE THE LUNG CANCER STORY. ONE PATIENT AT A TIME.

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Important STS National Database Research Featured as Clark Papers

RICHARD E. CLARK

MEMORIAL PAPERS

8:15 a.m. - 9:00 a.m.

Grand Ballroom

Monday

ince its inception in 1989, the STS National Database has played an essential role in generating research on quality improvement and patient safety. Three of the latest practicechanging studies—one each from the Adult Cardiac Surgery Database (ACSD), the Congenital Heart Surgery Database (CHSD), and the General Thoracic Surgery Database (GTSD)—will be presented as the 2017 Richard E. Clark Memorial Papers.

SURGICAL ABLATION FOR ATRIAL FIBRILLATION CONCOMITANT TO MITRAL OPERATIONS REDUCES MORTALITY

The Clark Paper for Adult Cardiac Surgery suggests that performing surgical ablation (SA) to treat atrial fibrillation (AFib) at the time of mitral valve repair or replacement (MVRR) may have a protective effect on mortality.

Adding SA during MVRR is known to improve late sinus rhythm. However, clinicians



impact of performing the two procedures concomitantly. Early studies indicated little effect on mortality, while more recent studies suggest a reduction in operative

mortality.

have been unsure of the operative mortality

J. Scott Rankin, MD

Researchers investigated the ACSD for MVRR patents between July 2011 and June 2014. Including tricuspid repair and coronary artery bypass grafting generated a cohort of 88,765 patients.

Risk-adjusted odds ratios for mortality were compared at the time of surgery whether or not SA was performed. Group 1, with no preop AFib and no SA, was the comparator for other groups. Group 2 had no immediate preop AFib but had SA. Group 3 had AFib but no SA. Group 4 had AFib plus SA.

Lead author J. Scott Rankin, MD, of West Virginia University in Morgantown, will present "Mortality Is Reduced When Surgical Ablation for Atrial Fibrillation Is Performed

STS MEETING BULLETIN

Concomitantly With Mitral Operations." Patients in group 3 who had AFib but who

did not receive SA had an odds ratio of 1.16 for mortality, or a 16% increase in relative risk of mortality compared with group 1 patients with no preop AFib or SA. But patients in group 4 who had AFib plus SA had a mortality similar to group 1 patients.

"At the time of mitral operations, the addition of SA to treat AFib can be performed without increased risk of mortality and may even be protective," Dr. Rankin said. "The data suggest an early mortality benefit for SA and imply

that further increase in SA application may be appropriate."

PREOPERATIVE RISK FACTORS IN EARLY SHUNT FAILURE

A new analysis of congenital heart surgery data was performed to determine the incidence of early shunt failure and identify specific patient groups that may be at increased risk of functional failure of a systemic-to-pulmonary artery shunt or a ventricle-to-

pulmonary artery shunt.

Early failure of systemic-topulmonary shunts is a potentially catastrophic complication in infants. But evidence to identify preoperative risk factors has been lacking, with most studies focusing



Nhue Do, MD

on prevention of failure using pharmacologic or other therapies but having small sample sizes or being underpowered.

Researchers queried the CHSD to find 9,172 infants aged 1 year or younger who underwent shunt construction as the primary source of pulmonary blood flow from 2010 to 2015 at 118 centers. The cohort included both systemic-to-pulmonary artery and right ventricle-to-pulmonary shunts. The study found

"The data suggest an early mortality benefit for SA and imply that further increase in SA application may be appropriate."

J. SCOTT RANKIN, MD

in-hospital early shunt failure occurred in 674 infants (7.4%) overall and that patients with early in-hospital shunt failure had significantly higher operative mortality and major morbidity and longer postoperative lengths of stay.

Lead author Nhue Do, MD, of Johns Hopkins School of Medicine in Baltimore, will present the Clark Paper for Congenital Heart

> Disease, "Early Shunt Failure, Prevalence, Risk Factors, and Outcomes: An Analysis of The Society of Thoracic Surgeons Congenital Heart Surgery Database."

Many of the identified in-hospital risk factors were intuitively expected, Dr. Do said, such as low body weight at the

time of shunt creation and the presence of a preoperative hypercoagulable state. Neither use or nonuse of cardiopulmonary bypass during shunt creation was associated with an increased risk of early shunt failure. And there was no increased risk of early shunt failure in single ventricle patients, including those with hypoplastic left heart syndrome.

"The data suggest that the Norwood operation with a right ventricle-to-pulmonary artery shunt was somewhat protective against early shunt failure," Dr. Do said. "There has been debate over whether to do a right ventricle-to-pulmonary artery shunt versus a modified Blalock-Thomas-Taussig shunt because of the need for a ventriculotomy, but we found it to be associated with decreased risk of early shunt failure."

The study confirmed that in-hospital shunt failure is both common and associated with high mortality. Results also highlight higherrisk patients and cohorts that may benefit from increased surveillance, enhanced antithrombotic prophylaxis, or other strategies to minimize the risk of shunt failure.

NEW QUALITY MEASURE FOR ESOPHAGEAL CANCER SURGERY

Investigators have developed a composite quality measure for esophagectomy for esophageal cancer using data from the GTSD.

The researchers queried the GTSD for esophagectomies performed at 167 participating centers between 2012 and 2014 to ascertain risk-adjusted operative mortality (at discharge and at 30 days post-surgery) and risk-adjusted major complications. "This measure still needs to be validated, but it demonstrates that we can measure quality in esophagectomies."

ANDREW C. CHANG, MD

Participants whose 95% Bayesian credible intervals (CrI) overlapped the STS mean composite score were considered two-star participants, while those whose 95% CrI were entirely below or above the STS mean were classified as one- or three-star sites, respectively. Discharge mortality and lengths of stay were used to benchmark GTSD participants against the National Inpatient



Sample 2012 cohort. Andrew C. Chang, MD, of the University of Michigan in Ann Arbor, will present the Clark Paper for General Thoracic Surgery, "The Society of Thoracic Surgeons Composite Score for Evaluating Program Performance

Chang, MD

in Esophagectomy for Esophageal Cancer." Operative mortality—a combination of

discharge and 30-day mortality—was 3.1%, and the major complication rate was 33.1%. Of the 167 participants, only 70 reported an average yearly operative volume of five or more esophagectomies during the study period.

Of these 70 participants, four (5.7%) were three-star, 64 (91.4%) were two-star, and two (2.9%) were one-star. The remaining 97 (58.1%) participants did not have sufficient operative volume to score reliably.

"The pressing concern is that a significant majority of participants don't do enough esophageal cancer operations to get valid measures," Dr. Chang said. "We also find that there are programs that have lower volumes and very good results. This measure still needs to be validated, but it demonstrates that we can measure quality in esophagectomies."

The next step, he added, is to consider how widely the measure can be used. It would be difficult to apply a quality measure knowing that more than half of GTSD participants would not qualify due to low volume.

Visit STS in the Exhibit Hall

THE OFFICIAL NEWSPAPER OF THE STS 53RD ANNUAL MEETING STS STAFF Robert A. Wynbrandt Executive Director & General Counsel

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JANUARY 21-25, 2017

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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.



ACC @ STS

1:15 p.m. – 5:15 p.m.

Room 330AB

Monday

care," Dr. Thourani said. It also will include

which patients with multivessel disease are

best treated percutaneously and options for

non-sternotomy multivessel

section, speakers will share

American Heart Association

Valve Guidelines, management

regurgitation, and an update on

of a patient with functional mitral

insights about the ACC/

transcatheter mitral valve devices. Dr. Thourani

also will describe his worst transcatheter mitral

"Our goal in this section is to provide

a standard of care defined by our societies

and to uphold our surgical heritage with the

management of mitral valve regurgitation,"

armamentarium of tools for treating mitral

Dr. Thourani's co-moderators are Niv Ad,

MD, of Cardiac Vascular and Thoracic Surgery

Associates in Falls Church, Va., Jodie Hurwitz,

MD, of the North Texas Heart Center in Dallas,

Roxana Mehran, MD, of Mount Sinai School

of Medicine in New York, Patrick T. O'Gara,

MD, of Brigham and Women's Hospital

University Hospitals Cleveland Medical

in Boston, and Joseph F. Sabik III, MD, of

Dr. Thourani said. "We'll also highlight

new technologies that can expand the

valve disease."

Center.

valve case and how he handled it.

coronary artery bypass grafting.

During the mitral regurgitation

ACC @ STS Tackles Complex Clinical Scenarios



Vinod H. Thourani, MD

ardiac surgery has entered a new era, with cardiologists and surgeons facing more complex cases. To manage these patients, it has become vital for specialists to interact, collaborate, and perform as one heart team.

Members of the American College of Cardiology and STS will examine difficult clinical scenarios facing heart teams, with a focus on aortic stenosis, atrial fibrillation, coronary artery disease (CAD), and mitral regurgitation.

"These topics embody the majority of cardiac care that practicing surgeons provide on a daily basis," said co-moderator Vinod H. Thourani, MD, adding that each section of the session will include a patient case, data to back up decision making, and a panel discussion.

A highlight of the aortic stenosis section will be lessons learned from the STS/ACC TVT RegistryTM, which was created by surgeons and cardiologists. Among the data that will be shared will be volume trends for surgical and transcatheter aortic valve

replacement (TAVR) in the United States. "TAVR has been approved for extreme-, high-, and now medium-risk patients, but low-

risk patients represent 80% of aortic valve surgical volume," said Dr. Thourani, of Emory University in Atlanta.

With a growing population of atrial fibrillation patients, session planners seek to give attendees a better understanding of the medical,

interventional, and surgical options.

"It remains alarming to me that so many patients present to our operating rooms with atrial fibrillation, yet we have no surgical therapeutic interventions. We have to be asking ourselves as a surgical community why this is the case," Dr. Thourani said. Presenters will look at which patients are optimal candidates for transcatheter management, how to decide between biatrial and left atrial-only surgical ablation surgery, and how to perform biatrial ablation.

The content of the CAD section was developed in response to the innovation of percutaneous coronary interventions in hybrid revascularization, which are pushing the envelope for the management of CAD.

"This section will highlight the most recent technologies that interventional cardiologists and surgeons are performing to help physicians make decisions about the best options for

"TAVR has been approved for extreme-, high-, and now medium-risk patients, but low-risk patients represent 80% of aortic valve surgical volume."

VINOD H. THOURANI, MD

SCHEDULE

continued from page 1

Adult Cardiac: Ischemic Room 320ABC

Congenital: Pediatric Congenital I Room 360BC

General Thoracic: Lung Cancer I Room 361BC

General Thoracic: Lung Transplantation Room 361A

International Symposium: The Quality vs Access Dilemma in Cardiothoracic Surgery-Regionalization, Building Sustainable Cardiothoracic Surgery Programs, and Humanitarian Crises Room 360A

SVS @ STS: Sharing Common Ground for Cardiovascular Problems Room 350DEF

4:15 p.m. - 5:15 p.m.

Surgical Motion Picture Matinee: Adult Cardiac Room 320ABC Surgical Motion Picture Matinee: Congenital Room 360BC

Surgical Motion Picture Matinee: **General Thoracic** Room 361BC

The Annals Academy: Propensity Score Matching Room 350DEF

5:15 p.m. – 6:30 p.m. Scientific Posters and Wine Grand Ballroom Foyer

5:30 p.m. - 6:30 p.m. Business Meeting (STS Members Only) Room 310ABC

6:30 p.m. – 7:30 p.m. STS-PAC Reception Meeting Room 340, Hilton Americas-Houston

7:30 p.m. – 10:30 p.m. STS Social Event: Space Center Houston Shuttle buses depart beginning at 6:45 p.m.

STS National Database Helps Improve Outcomes

or more than 25 years, the STS National Database has provided a foundation for

REDEFINING

QUALITY AND

WHAT'S NEW

1:15 p.m. – 5:15 p.m.

Room 351DEF

EVIDENCE:

Monday

cardiothoracic surgeons to improve patient outcomes by collecting data to assess procedures and develop guidelines for evidencebased practice. The breadth of evidence in the Database continues to grow, and a Monday afternoon session will address the

latest Database initiatives

in clinical practice guideline development, risk modeling, public reporting, and quality measurement and improvement.

"The goal is to showcase the scholarship

and quality of data that are available in the STS National Database," said session comoderator Vinay Badhwar, MD,

of West Virginia University in Morgantown. **PRACTICE THROUGH**

Seven research abstracts will focus on topics that include Medicaid expansion, links between outcomes of bypass grafting and valve surgery, lung resection, Staphylococcus aureus prevention strategies, and preventing wound infections.

"The invited presentations are from leaders of the STS Workforce of National Databases, other related STS workforces, and STS task forces," said session co-moderator Jeffrey P. Jacobs, MD, Chair of the STS Workforce on National Databases.

"This session is extremely important for learning how quality measurement is progressing and how to apply these developments in one's clinical practice."

VINAY BADHWAR, MD

"This combination of abstracts and invited lectures will allow attendees to grasp what is state of the art in quality improvement for cardiothoracic surgery."

A highlight will be the review of new quality insights in general thoracic surgery and how this effort has helped launch the opportunity to publicly report outcomes from the General Thoracic Surgery Database for the first time, said Dr. Badhwar, Chair of the

released online in December in The Annals of Thoracic Surgery.

"The guidelines support the safety and cardiac operation for the treatment of atrial

Force recently developed two mitral valve surgery composite measures and a surgeonlevel composite measure. David M. Shahian, MD, Chair of the Task Force, will review those measures.

Dr. Jacobs, Professor of Surgery and





Vinay Badhwar, MD

Jeffrey P. Jacobs, MD

Pediatrics at Johns Hopkins University in St. Petersburg, Fla., will review other STS measures that have been endorsed by the National Quality Forum.

"I will discuss specific aspects of several measures of performance that relate to cardiac and thoracic surgery, including survival after pediatric heart surgery and one of our newest measures related to individual cardiac surgeon performance," said Dr. Jacobs, Chief of the Division of Cardiovascular Surgery at Johns Hopkins All Children's Heart Institute.

Dr. Badhwar said, "This session is extremely important for learning how quality measurement is progressing and how to apply these developments in one's clinical practice, particularly given the ever-increasing influence that quality has on practice."

STS Task Force on Public Reporting. Another highlight will be the review of

the new STS Clinical Practice Guidelines for the Surgical Treatment of Atrial Fibrillation,

efficacy of adding surgical ablation to a fibrillation," Dr. Badhwar said.

The STS Quality Measurement Task

for improving patient

David A. Fullerton,

MD, of the University

of Colorado Anschutz

Medical Campus, will

then take the next step

by looking at how public

STS Past President

safety. Instead of identifying where the

STS/CATS/CSCS

Room 351DEF

11:30 a.m. - 12:30 p.m.

Monday

problems are, she will close the loop, going

from data generation, to review, optimizing the

safety."

patient experience, and creating a mechanism

reporting of quality metrics can affect and

improve cardiothoracic surgical practices.

"The data collected from hospitals, health

administrators, regions, and societies provide

powerful tools for surgeons to improve their

performance, garner more resources for their

institutions, and elevate the standard for all

surgeons," Dr. Schieman said. "Participation

in our national databases is a major plus.

cities, and regions to see where there are

potential areas for improvement. This goes

beyond individual surgeon performance."

Those who use the data can reflect on their

own practices, but also on their own hospitals,

Surgery Recommendations Vary by Race, **Study Shows**

urgeons are more likely to recommend lung resection for black cancer patients than white cancer patients, according to a study that will be presented this afternoon.

The study showed that "patient race significantly influenced risk estimation and surgical recommendations. How these findings influence shared decision making and their association with treatment disparities require further investigation," said Mark K. Ferguson, MD, of The University of Chicago, who is the lead author of "Patient Race Influences Risk Assessment and Recommendations for Lung Resection."

For the study, surgeons read a clinical vignette and then viewed a video interview

REDEFINING **PRACTICE THROUGH QUALITY AND** EVIDENCE: WHAT'S NEW Monday 1:15 p.m. – 5:15 p.m. Room 351DEF

a black or white patientactor. The participating surgeons recommended that 88% of black patients have lung surgery versus

75% of white

with either

patients. The patients were matched by age, body mass index, gait speed, and strength.

The 117 participating surgeons included 51 practicing surgeons and 66 trainees; 86 were white and 31 were in other selfidentified racial categories; 96 were men and 21 were women.

"The literature suggests that black patients are less likely to be recommended to have surgery than white patients," Dr. Ferguson said. "We found the opposite of that. I can't explain why recommendations for surgery in other studies are less for blacks than for whites."

The study, one in a series examining the use of video in making treatment recommendations, also suggests that videos influenced surgery recommendations more than the race-neutral clinical vignettes did. Because of the limited number of participating surgeons, more research is needed.

"I wouldn't say that I could draw clearcut conclusions from this. It seemed that the physicians—and this is both physicians of color and white physicians-had similar tendencies in terms of how they responded to the videos. Male and female physicians had some like tendencies in terms of how they responded to the videos," Dr. Ferguson said. "It suggests that maybe physicians don't see black patients in the same way they see white patients."

Using Data to Improve Patient Care

ore than ever, cardiothoracic surgeons may feel as if they are under a microscope with increasing scrutiny of their performance from professional societies, patients, and employers. Today's

session from STS, the Canadian Association of Thoracic Surgeons, and the Canadian Society of Cardiac

Surgeons will focus on bringing real-life quality improvement methods to cardiothoracic surgeons, their

Andrew J. Seely, MD, PhD, of the University of Ottawa in Ontario, Canada, will share how surgeons within the same group can help each other improve their performance. Dr. Seely developed a robust grading systemthe Ottawa TM&M-and an in-house data collection tool designed specifically for datadriven quality improvement. He then adopted a novel concept, looking at the "positive deviants." This method focuses on positive outliers and positive performers, rather than negative performers, said session co-moderator Colin Schieman, MD.

This focus on the high performers, rather than the low performers, is a change from how we typically think of morbidity data review, and it helps drive more open discussion and team-based improvement, said Dr. Schieman, of the University of Calgary in

Alberta, Canada. Dr. Seely will show how this method, widely adopted by Canadian centers, objectively allows for implementing a quality improvement system.

"Most surgeons are uncomfortable with data collection," Dr. Schieman said. "I was always worried about who would handle the data. What's the intention going to be? How public would it be? Would there be any control for the complexity of the cases?" With positive deviance, the data

collection is anonymous with a focus on "like individuals in a group who are particularly good at certain areas," Dr. Schieman said. "It's a different way of framing the conversation."

Susan D. Moffatt-Bruce, MD, PhD, MBA, of The University of Texas MD Anderson Cancer Center in Houston, will discuss how data derived from cardiothoracic surgery quality improvement efforts can lead to changes in care on a national scale.

"Her work is important because the whole process is about improving patient care," Dr. Schieman said. "She'll bring the discussion back to the patient and how to enhance patient

"The data collected from hospitals, health administrators, regions, and societies provide powerful tools for surgeons to improve their performance, garner more resources for their institutions, and elevate the standard for all surgeons."

COLIN SCHIEMAN, MD

AFib Differences Between Women, Men

ADULT CARDIAC:

11:30 a.m. – 12:30 p.m.

Room 310ABC

ARRHYTHMIA

Monday

ew-onset atrial fibrillation (AFib) after coronary artery bypass grafting (CABG) surgery has decreased in recent years, but an abstract being

presented today has found that incidence has decreased more among women than men.

The differences between women and men in incidence and duration of AFib post-CABG were examined in a study of data from the STS National Database. The data

were augmented with continuous in-hospital electrocardiography/telemetry monitoring.

"We were very careful about making sure we captured every single episode of AFib and its details," said lead author Giovanni Filardo, PhD, MPH, of Baylor Scott & White Health in Dallas. "We investigated the epidemiology of post-CABG AFib and gender differences in terms of incidence, timing, type, and duration of each single AFib episode, and the changing trends over time."

The abstract, "Sex Differences in the Epidemiology of New-Onset Post-Coronary Artery Bypass Grafting Atrial Fibrillation: A Large, Multicenter Study," found that from

2002 to 2010, adjusted new-onset AFib in women decreased from 36% to 24%, while in men it decreased from 42% to 31%. Following adjustment for STS-recognized

> risk factors, women had significantly lower risk for post-CABG AFib, as well as shorter durations of first and longest AFib episodes and total time in AFib.

"Women are doing significantly better, and that is very important," Dr. Filardo said. "We are working on

understanding why. Our next paper will be on assessing whether certain prevention and management strategies lead to better prevention and/or long-term survival."

Women had significantly lower risk for post-CABG AFib, as well as shorter durations of first and longest AFib episodes and total time in AFib.

Learning Opportunities Available in the Exhibit Hall

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

MONDAY

12:45 p.m. - 1:15 p.m. Medtronic: "Overcoming Challenges in VATS Lobectomy" 3:45 p.m. – 4:15 p.m.

Abbott: "Transcatheter Mitral Valve Repair"

TUESDAY

10:15 a.m. - 10:45 a.m. Houston Methodist: "Hybrid CV Surgery Room of the Future"

12:15 p.m. - 12:45 p.m. Ethicon: "Practical Skills in Thoracic Surgery"

Satellite Activities

Satellite activities are programs offered by industry and held in conjunction with the STS 53rd Annual Meeting. They are not developed or sponsored by STS.

TUESDAY

Baxter Healthcare 6:00 p.m. – 9:00 p.m.

The Role of Advanced Hemostats and Sealants in Blood Management During Cardiovascular Surgery: A Clinical Perspective Houston Methodist Institute for Technology, Innovation & Education, 6670 Bertner Ave., 5th Floor



Colin Schieman, MD

divisions, and the specialty.

EDWARDS INTUITY Elite valve system

Leading the Evolution

Advanced approach on a proven platform

The EDWARDS INTUITY Elite valve system represents our commitment to continued innovation in heart valve therapy. This valve system offers a unique combination of benefits, including facilitating MIS AVR and streamlining concomitant procedures.

Visit the Edwards Lifesciences booth at STS to learn more.

Important Safety Information EDWARDS INTUITY Elite Valve System Aortic Valve, Model 8300AB & Delivery System, Model 8300DB

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Chamberlain Papers Offer Latest High-Impact Research

sts.org

trategies distinguishing coronary artery bypass grafting (CABG) from percutaneous coronary intervention (PCI) in blocked arteries, optimal timing for stage-2 palliation after the Norwood operation in neonates, and long-term outcomes for elderly lung cancer patients are the topics of the three most important scientific abstracts accepted to the 2017 Annual Meeting program.

The J. Maxwell Chamberlain Memorial Papers honor Dr. Chamberlain, who has been called "the most important influence in the formation of The Society of Thoracic Surgeons." The Chamberlain Papers will be presented this morning as part of General Session I.

RETHINKING CABG STRATEGIES

Surgeons have long delayed CABG in patients with mild to moderate stenosis. Long-term data suggest that grafting patients with moderately stenosed coronary arteries provides long-term protection from myocardial ischemia.

"Studies in percutaneous interventions showed that if you stented an artery that had moderate stenosis, it was harmful. You had better outcomes if you waited until stenosis became severe," said Joseph F. Sabik III, MD,



Sabik III, MD

co-author of the Chamberlain Paper for Adult Cardiac Surgery, "Natural History of Moderate Coronary Artery Stenosis After Surgical Revascularization."

Although many people assumed the same was true of bypass surgery, Dr. Sabik said

he and his colleagues found that CABG and PCI require different revascularization strategies. "We now know that there is value in bypassing a moderately stenosed artery

because the graft is going to stay open 90% of the time. As stenosis in the native artery progresses, the graft remains patent

and protects the patient," said Dr. Sabik, from University Hospitals Cleveland Medical Center. The study authors analyzed retrospective

data on 55,567 patients with moderate stenosis (50%-69% angiographic blockage) who underwent primary isolated CABG between 1972 and 2011 at the Cleveland Clinic, Dr. Sabik's previous institution. The study compared 1-, 5-, 10-, and 15-year outcomes for patients who were





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not grafted, were grafted with an internal thoracic artery (ITA), or were grafted with a saphenous vein (SV).

As expected, native vessel stenosis progressed from moderate to severe in most patients. Stenosis progression was lowest in nongrafted patients, highest in SV-grafted patients, and intermediate in ITA-grafted patients. At 1, 5, 10, and 15 years, 8%, 9%, 11%, and 15% of ITA grafts were occluded compared to 13%, 32%, 46%, and 56% of SV grafts. At those same time points, ITA grafts conferred 29%, 47%, 59%, and 61% protection from myocardial ischemia compared to nongrafted arteries.

"As disease progressed in the native vessel, the ITA graft remained open and became protective," Dr. Sabik said. "If you bypass a moderately stenosed vessel with an ITA, you help patients live longer."

NEW TIMING FOR STAGE-2 PALLIATION AFTER NORWOOD

Clinicians may need to reconsider current protocols for stage-2 palliation following a Norwood operation in neonates with critical left ventricular outflow tract obstruction



for stage-2 palliation as quickly as possible following an initial Norwood operation, especially in highrisk infants. New data suggest an optimal window for stage-2 palliation for low- to

(LVOTO). Some

existing protocols call

average-risk infants.

"Performing the second stage operation after 3 months in low- or average-risk infants appears to maximize survival," said James M. Meza, MD, of the Hospital for Sick Children in Toronto. "Clinicians should adopt protocols or modify existing protocols for low- and average-risk patients to ensure that the operations take place within the optimal window for the second stage. And for higherrisk patients, many may end up failing single ventricle palliation. Survival was especially poor in high-risk patients who underwent the second stage quickly after the Norwood. Earlier consideration for heart transplantation may be what maximizes their long-term survival, with the caveat that there is a limited supply of hearts available for neonates."

Dr. Meza will present "The Optimal Timing of Stage-2 Palliation After the Norwood Operation: A Multi-Institutional Analysis From the Congenital Heart Surgeons' Society" as the Chamberlain Paper for Congenital Heart Surgery. Researchers analyzed outcomes for 534 neonates with LVOTO from 20 institutions. Most patients (71%) had stage-2 palliation surgery at a mean age of 5.4 months; 22% of patients died after Norwood, and the remainder underwent either biventricular repair or heart transplantation.

After stage-2 palliation, 10% died, 66% underwent Fontan, and the remainder were

J. MAXWELL **CHAMBERLAIN MEMORIAL PAPERS** Monday 7:15 a.m. – 8:15 a.m. Grand Ballroom

either awaiting Fontan or underwent heart transplantation.

The most important risk factor for death after Norwood was low birth weight. The risk-adjusted 4-year survival after Norwood was 72%. In low-risk infants, survival was compromised only by stage-2 palliation earlier than 3 months.

Survival in high-risk infants was severely compromised, especially when undergoing stage-2 palliation earlier than 6 months of age.

DATA LINKAGE HELPS ANALYZE LONG-TERM LUNG CANCER SURVIVAL

The Chamberlain Paper for General Thoracic Surgery presents the first long-term survival



analysis of elderly patients undergoing lung cancer surgery. The new analysis is the first from data linked between the STS General Thoracic Surgery Database (GTSD) and Medicare data. "Until now, the

GTSD has been limited to analyzing 30-day outcomes, which meant we could only address short-term surgical questions," said lead author Mark Onaitis, MD, of the University of California, San Diego. "Clearly, age and stage are the strongest predictors of survival, but because we now have such a large database, we can see how medical and surgical factors also contribute to long-term survival. We will be able to better hone in on individualizing treatments for patients in order to maximize long-term survival."

The paper, "Prediction of Long-Term Survival Following Lung Cancer Surgery for Elderly Patients in The Society of Thoracic Surgeons General Thoracic Surgery Database," linked the GTSD to Medicare data for lung cancer resections from 2002 to 2013, creating a database of 29,899 lung cancer resection patients. Wedge resection, segmentectomy, bilobectomy, and pneumonectomy were associated with increased risk of mortality compared to lobectomy. Smoking and low body mass index increased risk, while the thoracoscopic approach was associated with improved long-term survival compared to thoracotomy.

Dr. Onaitis said key areas for future study are oncologic outcomes from limited resections, survival following sublobar resection versus lobectomy, and survival after minimally invasive versus open procedures.

"We will be able to better hone in on individualizing treatments for patients in order to maximize long-term survival."



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1. Wallace DG, Cruise GM, Rhee WM, et al. A tissue sealant based on reactive multifunctional polyetheylene glycol. *J Biomed*. 2001;58:545-555. **2.** Hill A, Estridge TD, Maroney M, et al. Treatment of suture line bleeding with a novel synthetic surgical sealant in a canine iliac PTFE graft model. *J Biomed*. 2001;58:308-312. **3.** COSEAL Surgical Sealant Instructions for Use.

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SVS @ STS: Examining the Potential of Cell Therapy

he use of cell therapy for treating critical limb ischemia, refractory angina, and heart failure is just one of the links between cardiac and

vascular surgery that will be reviewed Monday during an annual session planned by STS and the Society for Vascular Surgery.

"In years past, we have learned a lot by listening to each other and not practicing in vacuums. Vascular surgeons bring interesting insights to problems we treat and vice versa," said

cardiac and vascular surgeon Keith B. Allen, MD, co-moderator of the session with vascular surgeon Jason T. Lee, MD, of the Stanford University School of Medicine in Palo Alto, Calif.

Cell therapy is an obvious area for the two groups to have a meeting of the minds. Studies released in the past 18 months have shown vascular surgeons its potential to treat critical limb ischemia. At the same time, cardiac surgeons have learned more about using cell therapy to manage heart failure and refractory angina.

"Here we are with two disciplines treating

three areas and using the same compounds.

SVS @ STS: **SHARING COMMON GROUND FOR CARDIOVASCULAR** PROBLEMS Monday

1:30 p.m. – 3:30 p.m. Room 350DEF

We thought this would be a nice way to cross-pollinate," said Dr.

Allen, of St. Luke's Mid American Heart Institute and the University of Missouri-Kansas City. The first two presentations will look

at areas where both specialties often work. A cardiac surgeon will offer management options for arch

pathology, and a vascular surgeon will share tips on management of the left subclavian artery

during aortic endovascular repair. "They will talk about different approaches

to managing the left subclavian artery because those often involve a bypass," Dr. Allen said. "Vascular surgeons don't do the big operations for the arch, but it is important for them to hear how cardiac surgeons manage that. Cardiac surgeons should hear about how to manage the head vessels or brachiocephalic vessels, particularly the left subclavian."

Two talks will review cell therapies for "no option" patients-those with critical limb

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The Patient Guide to Heart, Lung, and Esophageal Surgery A Website Presented by Cardiothoracic Surgeons Committed to Improving Patient Care



Available in both English and Spanish, this website is easily viewable on computers, tablets, and smartphones.

All information has been reviewed by STS members and is divided into the following sections:

- Adult Heart Disease
- Pediatric and Congenital Heart Disease
- Lung, Esophageal, and Other Chest Diseases
- Heart and Lung Transplantation
- Before, During, and After Surgery

Visit www.sts.org/patient-information to download a printable PDF for referring your patients to this website.



The Society of Thoracic Surgeons

"We have learned a lot by listening to each other and not practicing in vacuums."

KEITH B. ALLEN, MD

ischemia and those with medically refractory angina.

"Some are proprietary, some are autologous, and some are factor-derived," Dr. Allen said of therapies for critical limb ischemia. "The speaker will summarize the ups and downs of these therapies, which are in different stages of clinical trials."

For patients with medically refractory angina, many therapies involve the same grouping of cells, whether they are taken from a patient's hip, have been expanded and cultured, or have been filtered, Dr. Allen said.

The last talk, on end-stage congestive heart failure, will go beyond angiogenesis to address the use of cell therapy or stem cells in enhancing and improving heart function, he said.

New STS Members Approved

120 Active and 88 International Membership applicants were approved by the Society's Board of Directors this past Sunday, pending dues payment. View a list of the new STS members at sts.org/newmembers.

Claim Your Continuing Medical Education Credit

he STS 53rd 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 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 STS/AATS Tech-Con 2017.

Attendees can complete the overall meeting evaluations and all individual session evaluations onsite at CME Stations located near Registration, near Room 330, and in Hall B3. Certificate printing is available.

Attendees also can complete evaluations and claim credit by visiting sts.org/2017evaluation or using the STS Annual Meeting Mobile App. In order to make this process more convenient for attendees, the meeting evaluations will be available online through Friday, February 10, 2017.

Attendees can log in to the website with the following information: Username: 6-digit member ID number located at the upper-right side of the meeting badge. Password: First initial and last name.

Early Risers Offer Something for Everyone

ick off your Tuesday morning with one of 11 Early Riser Sessions that will be held from 7:30 a.m. to 8:30 a.m. Sessions will be offered on a wide variety of topics. Ample time will be provided for discussion with the presenters.

Session 1: Career Transitions: How to Prepare for Life After the OR Room 351DEF

Session 2: Research Using the STS National Database[™] Room 360A

Session 3: Clinical Trials in Cardiothoracic Surgery Room 362A

Session 4: SBRT vs Surgery: A Debate With a Twist Room 362BC

Session 5: Management of Functional Mitral Regurgitation in the Modern Era Room 310ABC

Session 6: Robotic Lung Resection vs VATS for Lung Cancer Room 360BC

Session 7: All-arterial CABG vs Hybrid CABG vs Multivessel PCI: What Is the New Standard for Revascularization? Room 361BC

Session 8: Learning From My Mistakes: A Case I Wish I Could Do Over Room 330AB

Session 9: Improving Combat Casualty Care: The Use of Golden Hour Offset Trauma (GHOST) Surgical Teams and Group O Low-Titer Whole Blood Transfusion in the Field Room 361A

Session 10: Developing an Extracorporeal Life Support Program Room 350DEF

Health Policy Forum: Ready or Not: Implementing the New Merit-Based Incentive Payment System in Your Practice Today Room 320ABC



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STS members attended a Fly-In on Capitol Hill last fall.

Learn How to Advocate for the Specialty

TS Key Contacts are the lifeblood of the Society's advocacy efforts. Key Contacts meet with their elected officials in Washington, provide facility tours at home, and do much more to advocate for legislative and regulatory issues that affect cardiothoracic surgeons and their patients.

But many surgeons may not know how to get started or may feel unprepared for these meetings. A new session this morning, STS Key Contacts: How to Become an Advocate for Cardiothoracic Surgery, will break down the process and provide attendees with the tools to become more involved. Surgeon leaders will share their experiences about participating in advocacy activities, and STS staff will review the Society's advocacy priorities. Experienced and novice Key Contacts also will role-play a meeting with a member of Congress. Don't miss this new offering, which will be held at 11:30 a.m. in Room 360A. ■

The Society of Thoracic Surgeons

Symposium on Robotic Mitral Valve Repair

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Meet Face-to-Face With Top Employers

he STS/CTSNet Career Fair offers the opportunity to speak with recruiters about career opportunities at a number of organizations. Participating companies will be located in Hall B3 (just outside the main Exhibit Hall) and are available to speak with you at the following times:

Monday	9:00 a.m. – 4	4:30 p.m.
Tuesday	9:00 a.m. – 3	3:30 p.m.
CAREER FAIR EXHIBIT	ORS	
Abington Hospital – Jef	ferson Health	Table 1
Carolinas HealthCare S	ystem	
Medical Group		Table 3
The Christ Hospital Hea	Ith Network	Table 7
Covenant Healthcare		Table 4
Memorial Healthcare S	ystem	Table 5
Our Lady of Lourdes Re	egional	
Medical Center		Table 9
Presbyterian Healthcare	e Services	Table 6
Southcoast Health		Table 8
Summa Health System		Table 2

As of January 6, 2017

Attend the STS Social Event Tonight

oin your colleagues this evening at the 2017 STS Social Event at the Space Center Houston, the official visitor's center of NASA's Johnson Space Center. In addition to enjoying an extensive buffet and open bar, you'll be able to check out artifacts documenting the history of space travel, including a collection of spacesuits worn by NASA astronauts, the Apollo 17 Command Module, the giant Skylab Trainer, and more.

The Social Event will be held from 7:30 p.m. to 10:30 p.m., with shuttle buses departing from all official STS hotels beginning at 6:45 p.m. Don't miss this opportunity! It's not too late to purchase a ticket at Registration.



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After the Annual Meeting, visit STS Facebook and Twitter pages for news, events, and CME credit opportunities.

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Expect Innovation

Annual Meeting Kickoff

The STS 53rd Annual Meeting "kicked off" this weekend as Houston prepares to host the Super Bowl. On Saturday, STS/AATS Tech-Con previewed the latest technology in development. Sessions focused on managing mitral valve disease and atrial fibrillation, precision surgery, aortic and endovascular procedures, advanced thoracic surgery, ventricular assist devices, and the changing face of health care. On Sunday, sessions covered practice management, critical care, and more.







Looking to the Future Scholars

Question of the Day

What did you learn that you will take with you?



"There was a video session with pitfalls and tricks of cardiac surgery. There were interesting video presentations on how different surgeons do things in coronary surgery, as well as tips with the mitral valve that

I think I could probably implement." Harsh Jain. MD

Mercy Hospital Cardiothoracic Surgical Associates Clarence, N.Y.



"At the Tech-Con general thoracic session, there were a lot of great presentations on mobile patient engagement applications and using marketing strategies to improve your practice. There were

a lot of ideas about trying to find new ways to engage patients and focus on patient-centered outcomes, which I could implement for my practice."

Lisa Brown, MD, MAS University of California, Davis Sacramento, Calif.



"I attended a session about mitral and tricuspid valves where they discussed concepts and new parameters that were interesting." Roberto Gonzalez, MD Monterrey, Mexico

"There was a good lecture on mitral valve calcification. There also was a session on right ventricular dysfunction post-cardiac surgery, which had a very useful talk with some tips on how to manage patients in the postoperative period." Chandrasekar Padmanbhan, MD, MBA GKNM Hospital

Coimbatore, India

"Transcatheter valves and MitraClip are two big changes in surgery that we need to get more involved in. I am picking up a few things with



are just starting on that, and I haven't had that much training yet." Kuo Fon Huang, MD Mercy Hospital Springfield Springfield, Mo.



HEATER-COOLER continued from page 1

importers, and user facilities, as well as physicians, patients, and consumers. The database has 339 reports related to HCDs between January 2010 and August 2016. The surgical procedure involving HCDs was identified in 94 reports, and 50% of them involved device implants, such as left ventricular assist devices, prosthetic valves/ rings, and vascular grafts.

NTM was the most frequent organism cited in the reports, and Mycobacterium chimaera was the predominate isolate. Detection is challenging because it takes 2-8 weeks to grow on mycobacterial media, Dr. Fishman said. Identifying the species requires sequencing that is performed at only a "handful of labs" in the US.

"This is a device problem, not a surgical problem," he added.

The infections are linked to HCDs from five different manufacturers that are used in the US and around the world, with 89% linked to one manufacturer, Dr. Allen said, emphasizing that all of the manufacturers are working with regulatory agencies to resolve the problem.

The FDA recommends that all institutions adhere to manufacturer instructions for HCDs, use only sterile or filtered water in the devices, direct HCD exhaust away from the surgical field, and remove units with signs of contamination.

The FDA and the Centers for Disease Control recommend that some HCDs manufactured before September 2014 be transitioned out of service and that patients exposed to the devices since January 1, 2012, be notified in writing about the risk of infection.



The risk of infection increases with length of exposure to NTM, which is aerosolized from the HCDs. Clinical presentations of infection include fatigue, fever, sweating, dyspnea, weight loss, and cough. Because surgical wound infections are involved, treatment includes removal of the involved device and multiple-drug therapy, Dr. Fishman said.

"We don't know how long to treat these infections. At the least, most people are treating for 9 months, but some people are extending therapy to a year or 18 months," he said. "The outcomes are not great. In general, the overall mortality is greater than 50%. That is attributed almost certainly to the delayed diagnosis."

Miguel Sousa Uva, MD, PhD, President of the European Association for Cardio-Thoracic Surgery, commented on the European experience with these infections, which were reported overseas before being identified in the US.

Larry L. Shears, MD, of Wellspan Health in Chattanooga, Tenn., first experienced NTM infections at Hershey Medical Center in York, Penn., in June 2015. He discussed patient symptoms, adding that it "appeared as though they had a malignancy."

Kenneth G. Shann, CCP, LP, Director of Perfusion Services at Massachusetts General Hospital in Boston, offered recommendations on properly caring for HCDs. He suggested that a checklist be used to clean devices, that cleanings be documented, and that the serial numbers of HCDs used in procedures be recorded.

STS President Joseph E. Bavaria, MD noted that the Society has issued a statement about HCDs, as well as provided advisories from the CDC and FDA, on its website at sts.org/heater-cooler.

840

417

235

1205

147

243

2017 ANNUAL MEETING EXHIBITORS

331

733

739

751

129

955

AF06 (Hall B3)

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Founded in 1917, the American Association for Thoracic Surgery aims to promote scholarship, innovation, and leadership in thoracic and cardiovascular surgery. It has become an international professional organization of more than 1,350 of the world's foremost cardiothoracic surgeons. www.aats.org

American College of Chest Physicians Glenview. IL

The American College of Chest Physicians is the global leader in advancing best patient outcomes through innovative chest medicine education, clinical research, and team-based care. CHEST is the essential connection for its 19.000 members from around the world who provide patient care in pulmonary, critical care, and sleep medicine.

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San Diego, CA

BD

BD is a global corporation helping clinicians and hospitals measurably improve patient care. The PleurX® Catheter System allows patient to manage symptoms associated with recurrent pleural effusions and malignant ascites at home. reducing length of stay and cost of care while improving quality of life. Visit BD at Booth 147 to learn more.

Berlin Heart Inc The Woodlands, TX

Berlin Heart is the only company worldwide that develops, manufactures, and distributes ventricular assist devices 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 United States under Humanitarian Device Exemption regulations by the Food and Drug Administration.

BFW Inc Louisville, KY

BFW is known as a worldwide technological leader in surgical illumination and headlight video imaging. Visit Booth 240 to experience the foremost innovations in portable LED headlights offering intense, clean, bright white light and the new Hatteras™ LED light source-unmatched intense fiber optic illumination for headlights and instrumentation.

O BioStable Science & Engineering 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.

O Biostage

Hingham, MA Biostage is developing bioengineered implants based on the company's Cellframe™ technology, which combines a proprietary biocompatible scaffold with a patient's own stem cells to create Cellspan™ implants. These first-oftheir-kind implants are being developed to treat life-threatening conditions of the esophagus, bronchus, or trachea. For more information, visit www.biostage.com.

O BLOXR Solutions North Branch, NJ

Manufacturer of radiation protection cream and apparel. ULTRABLOX® X-Ray Attenuating Cream helps protect a clinician's hands during radiological procedures without affecting dexterity and tactile feel. XPF® radiation shields provide a lightweight, effective, machine-washable alternative to lead and like-lead aprons and apparel.

Bolton Medical is a subsidiary of the WerfenLife Company, a global company that manufactures and distributes medical diagnostic solutions and medical devices worldwide. Bolton's vision is to become the leading provider of endovascular solutions for aortic disease. Bolton develops, quality products solely focused on the aorta.

Bovie Medical Corporation Clearwater, FL

Bovie® Medical will be featuring J-Plasma®-the helium-based gas plasma technology that is transforming the way surgeries are performed. J-Plasma® works with precision and versatility across open and laparoscopic procedures. Bovie also will exhibit its complete line of electrosurgical products.

😯 Cardiac Surgical Unit	
Advanced Life Support	
Simpsonville, KY	

Cardiac Surgical Unit Advanced Life Support (CSU-ALS) is the leading provider of CSU-ALS training in the US, Canada, and Mexico. It is the sole distributor of the CSU-ALS manikin. CSU-ALS can bring training to your hospital and team or vour team members can attend national provider and trainer courses. Course completion results in CSU-ALS Certification are based on a 2-year renewal cycle.

O CG Health Partners, LLC Syracuse, NY

CG Health Partners provides strategy consulting and execution support exclusively to cardiothoracic and vascular surgery practices for successful hospital alignment. From academic employment to professional services agreements, its partners have the breadth and depth of experience to craft and negotiate the most favorable economic model for the surgeon.

Cook Medical Bloomington, IN

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Founded in 1963, Cook Medical pioneered many of the medical devices now commonly used to perform minimally invasive medical procedures throughout the body. Today, the company integrates medical devices, drugs, and biologic grafts to enhance patient safety and improve clinical outcomes. Since its inception, Cook has operated as a family-held private corporation.

CorMatrix

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Roswell, GA CorMatrix® Cardiovascular markets its ECM® Bioscaffold devices for vascular repair, pericardial repair and reconstruction, cardiac tissue repair, and CanGaroo ECM Envelope for CIEDs. CorMatrix ECM Technology allows surgeons to restore the native anatomy of cardiac and vascular tissue in need of repair, serving as a superior alternative to synthetic or cross-linked materials.

CryoLife

Kennesaw, GA CryoLife, Inc® is one of the world's leading contemporary medical device companies, providing preserved human cardiac and vascular tissues, surgical adhesives and sealants, prosthetic heart valves, cardiac lasers, and other medical devices. Since the company's inception in 1984, it is estimated that its products and tissues have helped more than 1 million patients worldwide.

CT Assist Philippi, WV

CT Assist is a managed service provider of cost-effective cardiothoracic surgery advanced practitioners who deliver quality care. CT Assist provides workforce management solutions from long-term to locum tenens and vacation coverage. It is a physician assistant-owned nationwide employer of talented and experienced cardiothoracic PAs and nurse practitioners.

CTSNet Chicago, IL

CTSNet (www.ctsnet.org) 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.

🕐 Delta Companies, The 1042 Dallas, TX

The Delta Companies offer permanent and temporary staffing solutions nationwide for physicians, physician extenders, therapy, and other allied health care professionals. Physician staffing services are represented by Delta Physician Placement and Delta Locum Tenens. All other allied health care staffing services are represented by Delta Healthcare Providers.

Designs for Vision

Ronkonkoma, 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®, providing the brightest and safest untethered illumination. Introducing the L.E.D. Daylite® Nano Cam HD-document the procedure with HD video from your prospective.

Dextera Surgical 132

Redwood City, CA

O Domain Surgical Salt Lake City, UT

Domain Surgical's FMX Ferromagnetic Surgical System is an advanced thermal energy surgical platform that uses ferromagnetic technology to cut, coagulate, and seal tissue. A variety of surgical tools have been designed to bring the unique clinical benefits of this technology to a broad array of surgical subspecialties.

Tokyo, Japan

EBM

EBM, a biomedical spin-out venture company from Japan, provides the original beating heart simulator and quantitative assessment system for off-pump coronary artery bypass grafting and vascular anastomosis worldwide. Skill assessment is based on rapid CFD technology and validated silicone vascular model.

O Bolton Medical Sunrise, FL

manufactures, and distributes innovative, high-

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🕐 NEW EXHIBITORS 🛛 😋 MEETING BULLETIN ADVERTISERS

O Eclipse Loupes and Products Orchard Park, NY

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Eclipse Loupes and Products offers the highest quality surgical loupes and lights at the lowest prices. All of its products come backed with an industry-leading lifetime warranty. Stop by and see for yourself why the company eclipses the competition.

C Edwards Lifesciences

Edwards Lifesciences is the global leader in the science of heart valves and hemodynamic monitoring. Driven by a passion to help patients, the company partners with clinicians to develop innovative technologies in the areas of structural heart disease and critical care monitoring, enabling them to save and enhance lives. Additional company information can be found at www. edwards.com.

Eight Medical	1140
Bloomington, IN	

Elsevier 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	Pharmaceuticals
Ewing, NJ	

Supporting the preservation and growth of human systems. From the cell to the entire organ, the company looks to advance medical treatments and the research that creates new medical treatments. Originally developed for cardiac surgery, Custodiol®HTK offers superior convenience, water-like viscosity, and no need for additives or filters, which makes it a preferred solution for many transplant centers.

Ethicon US, LLC/DePuy Synthes 527 Cincinnati, OH

Ethicon US, LLC and DePuy Synthes bring to market a broad range of innovative surgical products, solutions, and technologies used to treat some of today's most prevalent medical issues, such as colorectal and thoracic conditions, spine and cardiovascular conditions, cancer, obesity, and other conditions requiring general surgery.

European Association for Cardio-Thoracic Surgery AF08 (Hall B3) Windsor, United Kingdom

EACTS is the largest European association devoted to the practice of cardiothoracic 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. Visit Booth AF08 for more information.

European Society of Thoracic Surgeons Exeter, United Kingdom AF07 (Hall B3)

ESTS is the largest international general thoracic surgery organization with more than 1,550 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. The 25th European Conference on General Thoracic Surgery will be held on 28-31 May 2017, in Innsbruck, Austria. www.ests.org

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Fehling Surgical

Acworth, GA Fehling Surgical Instruments, Inc is the leader in fine crafted surgical instrumentation that has focused on cardiovascular surgery for more than 30 years. The company features minimally invasive valve sets, including NEW retractor designs for unmatched atrial exposure of the left atrium. The CERAMO and Superplast instruments are designed specifically for cardiovascular procedures (needle holders, forceps, clamps, and MICS).

FUJIFILM Medical Systems USA, Inc 953 Wayne, NJ Fujifilm Endoscopy is a market leader and

regimm Endoscopy is a market leader and progressive physician partner in improving patient outcomes through innovative endoscopic imaging technologies. The advanced endoscopic tools for pulmonary and gastrointestinal physicians, such as the new SU-1 Ultrasonic Processor, touch millions of lives – a goal at the forefront of the company's mission.

General Cardiac Tech San Jose, CA

The Heart Hugger Sternum Support Harness is a patient-operated support harness applied postoperatively to splint surgical wounds. Benefits include improved patient compliance, faster return to premorbid respiratory levels, fewer wound complications and better postoperative mobility. It is useful for open heart surgery, thoracotomy, fractured rib, and other chest trauma patients.

O General Thoracic Surgical Club 918 Zumbrota, 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.

928 Cenesee BioMedical 847

Denver, CO Design Beyond Standard. Genesee BioMedical, Inc provides unique devices for cardiac surgery, including annuloplasty for mitral and tricuspid repair, sternal/thoracic valve retractors, instruments for minimally invasive aortic, transcatheter aortic valve implantation, and robotic surgeries, coronary graft markers, suture guards, retraction clips, and myocardial needles. www. geneseebiomedical.com

🗘 Getinge Group

Wayne, NJ Getinge Group is a leading global provider of products and systems that contribute to quality enhancement and cost efficiency within health care and life sciences. The company operates under the three brands of ArjoHuntleigh, Getinge, and Maquet. It builds quality and safety into every system and enhances efficiency throughout the clinical pathway.

Gore & Associates 1201

Flagstaff, AZ The Gore Medical Products Division has provided creative solutions to medical problems for three decades. More than 35 million Gore medical devices have been implanted worldwide. Products include vascular grafts, endovascular and interventional devices, surgical materials, and sutures for use in vascular, cardiac, and general surgery. For more information, visit www. goremedical.com.

GP Cosmetics	1027
Las Vegas, NV	

© Hackensack Meridian Health 143 Wall, NJ

Hackensack Meridian Health is a leading, not-forprofit 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.

HCA Brentwood, TN

HCA owns and operates more than 160 health care facilities in 20 states with opportunities coast to coast. HCA was one of the nation's first hospital companies. It is committed to the care and improvement of human life. The company strives to deliver quality health care that meets the needs of the communities it serves.

Heart Hospital Baylor Plano, The 725 Plano, TX

The Heart Hospital Baylor Plano is a cardiovascular specialty hospital in North Texas that opened in 2007. In less than a decade, the hospital's 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 AF05 (Hall B3) Beverly, MA

The Heart Valve Society (HVS) – "The Heart Team in Action." HVS welcomes you to become a part of something unique. HVS offers all members of the heart valve community the opportunity to participate in its annual meetings, as well as volunteer, participate, and become active in its committees and working groups. Join the HVS! Learn more at www.heartvalvesociety.org.

O O Houston Methodist Hospital 923 Houston, TX

Houston Methodist Hospital is one of the nation's largest hospitals, an academic medical center, and a center for visionary research. *U.S. News & World Report* recently named it one of only 20 hospitals on its prestigious Honor Roll. Building on a history of innovation, Houston Methodist continues to pioneer a better tomorrow through research, innovation, and breakthroughs today.

HRA Healthcare Research & Analytics Parsippany, NJ

HRA Healthcare Research & Analytics is the market leader in conference-based health care research, with nearly 40 years of experience. HRA provides solutions supporting decision making/strategy development across health care channels. The company's portfolio encompasses quantitative/qualitative, custom, and syndicated services supporting pharmaceutical/biotech/ medical device markets.

International Society for Minimally Invasive Cardiothoracic Surgery AF04 (Hall B3) Beverly, MA

ISMICS: Innovation, Technologies, and Techniques in Cardiothoracic and Cardiovascular/Vascular Surgery. 2017 ISMICS Annual Scientific Meeting, 7-10 June 2017, Cavalieri Waldorf, Rome, Italy. www.ismics.org.

Intuitive Surgical Sunnyvale, CA

Intuitive Surgical, Inc designs, manufactures, and distributes the da Vinci® Surgical System, technology designed to allow surgeons to perform many complex procedures minimally invasively.

IsoRay Medical Richland, WA

Isoray Medical manufactures and distributes radiation therapy sources for direct implantation into cancer or surgical margins following resection of cancer. IsoRay markets cesium-131 based brachytherapy meshes and strands for resection line treatment following surgery for high-risk lung cancers, resulting in highly conformal adjuvant radiation therapy that spares critical thoracic structures.

JACE Medical Winona Lake, IN

JACE Medical pioneered the world's first rigid sternal closure system applied pre-sternotomy: the Grand Pre®. JACE Medical is a company and culture committed to creating innovative, transformational technologies that facilitate optimal patient treatment, recovery, and future wellness. Visit Booth 926 and see how the company "thinks outside the paradox." Get more information at JACEMED.com.

Japanese Organization for Medical Device Development, Inc 1023 Tokyo, Japan

JOMDD, Inc is engaged in the medical device incubation business, leveraging untapped Japanorigin technologies. The company is currently developing multiple medical device seeds with high potential and uniqueness. Its main product is the kit for the Ozaki AVNeo procedure that may shift the paradigm of treatment for aortic valve diseases. The single-use kit is now available in the US market.

Just Co, Ltd Torrance, CA

Only a dedicated plating company can provide "the strongest diamond plating" technology. The company can designate the plated layer, which anchors the diamond base on purpose. Its technology is unique and popular to those in the medical field in need of microsurgery instruments and endoscope tips.

Cleveland, OH

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

Karl Storz Endoscopy747El Segundo, CAKarl Storz offers solutions for thoracic surgery,

including slender, easily dismantled MediaFIT instruments that offer economic solutions for mediastinoscopy. The ENDOCAMELEON® Telescope allows surgeons to adjust viewing directions from 0° to 120° without changing telescopes. The IMAGE1 S™ Camera Architecture System provides brilliant, natural color rendition and innovative visualization capabilities

Camarillo, CA

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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 and maintains compression. The low-profile clasp minimizes palpability, and the polymer cable allows for quick re-entry.

C KLS Martin Jacksonville, FL

KLS Martin, a responsive company, is focused on the development of innovative products for oral, plastic, and craniomaxillofacial surgery. New product developments in its titanium osteosynthesis plating systems allow these products to be used for rapid sternal fixation and reconstruction.

Koros USA, Inc

Moorpark, CA Koros USA manufactures and distributes coronary artery bypass, aortic valve replacement, internal mammary artery, and mitral valve retractors, pediatric and adult sternum spreaders, rib spreaders, and titanium/stainless steel needle holders and forceps. High-demand state-of-the-art instruments include the Internal Mammary Artery Tower, SWIFT, and Pro-Retractors.

LifeNet Health Virginia Beach, VA

LifeNet Health helps save lives, restore health, and give hope to thousands of patients each year. It is the world's most trusted provider of transplant solutions, from organ procurement to new innovations in bioimplant technologies and cellular therapies—a leader in the field of regenerative medicine, while always honoring the donors and health care professionals who allow the healing process.

🗘 LivaNova Arvada, CO

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LivaNova is a world leader in the treatment of cardiovascular disease. Its innovative product portfolio includes aortic and mitral valve replacement and repair, perfusion equipment, cannula, and minimally invasive cardiac surgery instruments. For more information, visit www. livanova.com.

LoupeCam Scottsdale, AZ

LoupeCam® is the market leader in head-mounted HD surgical cameras and is the ONLY company offering cross platform (Mac, Windows, and soon Android) compatibility. The company offers five different magnification lenses to match all surgical points of view, along with a Bluetooth foot pedal, which allows for hands-free control of the camera.

C LSI Solutions Victor, NY

LSI Solutions® is celebrating its 10th year of clinical use and more than 3 million fasteners sold worldwide. COR-KNOT® is suture fastening technology you can trust. COR-KNOT® reduces cardiopulmonary bypass and cross clamp time,

2017 ANNUAL MEETING EXHIBITORS cont.

saving total operative time and improving patient outcomes. Visit www.lsisolutions.com.

O Mallinckrodt Pharmaceuticals 244

Hampton, NJ Mallinckrodt is a global business that develops, manufactures, markets, and distributes specialty pharmaceutical and biopharmaceutical products and therapies, as well as nuclear imaging products. Mallinckrodt provides key products for hemostasis during surgery. Visit www.mallinckrodt.

Med Alliance Solutions

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.

Medela

McHenry, IL Medela provides medical vacuum technology solutions for advancement of patient care. Thopaz takes chest drainage therapy to a new level of care by regulating the applied pressure at the patient's chest while digitally monitoring critical therapy indicators. Thopaz Chest Drainage System is clinically proven to improve outcomes and streamline care.

Medistim

Plymouth, MN

Medistim is the standard of care in the operating room. With the unique combination of transit time flow measurement and high-frequency ultrasound imaging guidance to help reduce and minimize the risk of negative postoperative outcomes, Medistim's quality assessment technology offers surgeons quantifiable validation and guidance during cardiovascular, vascular, transplantation,

O Medtronic

and neurosurgery.

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

Myriad Genetic Laboratories, Inc 343 Salt Lake City, UT

Myriad Genetics is a leading molecular diagnostic company dedicated to making a difference in patients' lives through the discovery and commercialization of transformative tests to assess a person's risk of developing disease, guide treatment decisions, and assess risk of disease progression and recurrence.

Nadia International

Austin, TX Educational/surgical bronze sculptures for the thoracic surgeon. These museum-quality limited editions are created by the world famous sculptor Ronadró. More than 7,500 surgeons in 77 countries collect his fine works of art. Introducing MIRACLE OF LIFE II and IN GOD's Hand II at the 2017 meeting.

709 NeoChord, Inc

St. Louis Park, MN NeoChord is a medical technology company leading the advancement of minimally invasive, beating heart repair of degenerative mitral valve regurgitation. NeoChord received CE market clearance in December 2012 for the DS1000 system and has successfully treated more than 450 patients to date.

NeuWave Medical Madison, WI

NeuWave Medical® is changing the future of lung ablation. The NeuWave Medical Intelligent Microwave Ablation System offers a minimally invasive, non-surgical procedure for lung lesions. The versatile probe portfolio includes 17 gauge probes specifically designed for precise and controlled ablations. The new Ablation Confirmation[™] software offers the only integrated in-procedure confirmation.

Nova Innovations Las Vegas, NV

Colympus America Inc Center Valley, PA

Olympus is a precision technology leader in designing and delivering imaging solutions in health care, life science, and photography. Through its health care solutions, Olympus aims to improve procedural techniques and outcomes and enhance the quality of life for patients.

Ornim, Inc Foxboro, MA

Ornim specializes in research, development, and distribution of noninvasive patient monitors specializing in the field of tissue and cerebral blood flow. Its bedside product, c-FLOW™, is based on the patented UTLight[™] technology designed to provide physicians with unique monitoring solutions that are imperative to individualized and personalized patient care.

Oscor Inc Palm Harbor, FL

Oscor is a leading provider of cardiac stimulation products and vascular access devices optimized for cardiothoracic surgery. Products include external pacemakers, temporary pacing leads, myocardial pacing wires, and a variety of pacing cables and accessories. Oscor is proud to present the newest in dual-chamber pacemaker and bipolar heartwire technology

© OSF HealthCare

Peoria, IL

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OSF HealthCare, owned and operated by The Sisters of the Third Order of St. Francis, includes the OSF Healthcare System, which consists of 11 hospitals and medical centers and two colleges of nursing. OSF HealthCare operates facilities in Illinois and Michigan.

P & M Harmony	1043
Las Vegas, NV	

Pinnacle Biologics

Chicago, IL Pinnacle Biologics identifies critical cancer therapies to provide life-changing outcomes for patients worldwide. Their portfolio of products supports photodynamic therapy, which can be used for the treatment of endobronchial nonsmall-cell lung cancer, esophageal cancer, and high-grade dysplasia in Barrett's esophagus.

Priority Heart 850

New York, NY The SternaSafe sternal brace is the nextgeneration alternative for postoperative sternotomy patients. Are you still using a pillow? The SternaSafe provides necessary compression needed to heal the site and decrease pain for the patient. The SternaSafe has three separate features: non-patient activation, handgrip activation, and pulley activation. One size fits all.

O Providence Health & Services 1134 Portland, OR

Providence Health & Services is affiliated with Swedish Health Services, Pacific Medical Centers, and Kadlec. Together, these organizations include





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more than 5.000 employed providers. 35 medical centers, and more than 600 clinics in Alaska. California, Montana, Oregon, and Washington. The company is currently recruiting providers in nearly all medical specialties throughout the West. providence.org/providerjobs

Quest Medical Inc 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.

Regional Data Managers: STS National Database Ann Arbor, MI

The Regional Data Manager booth 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!

ReliantHeart, Inc Houston, TX	1037
rEVO Biologics	950

rEVO Biologics Framingham, MA

rEVO Biologics, Inc is a commercial-stage biopharmaceutical company focused on the development and commercialization of specialty therapeutics to address unmet medical needs in patients with rare, life-threatening conditions. The company's lead product, ATryn, is the first and only plasma-free antithrombin concentrate.

RTI Surgical

Alachua, FL RTI Surgical® is a leading global surgical implant company providing surgeons with safe biologic, metal, and synthetic implants. RTI provides surgeons with metal, cable, and plating systems, as well as biologic options for cardiothoracic and trauma surgical procedures. Cardiothoracic implants offer increased stability and flexibility for anterior chest wall fixation for all types of closures.

Rultract/Pemco Inc Cleveland, OH

Rultract's surgical retractors provide gentle and uniform lift, allowing maximum exposure for IMA dissection, redo hearts, xiphoid entry, subxiphoid pericardial procedures, minimally invasive procedures (Thoratrak capable), parasternal procedures, pediatric/ASD, t-incisions, transabdominal GEA midcab, pectus, LVAD extraction, and TEMLA procedures.

SHARK TANK

continued from page 1

early investors, and 24% were not interested in investing. Dr. McCarthy called the device "novel" and said he was a possible investor, while Anderson said he was all in.

The second device pitched was the FlexDex, which translates a surgeon's hand motion to a laparoscopic instrument tip during taxing minimally invasive surgery, such as a foregut procedure. It is a relatively inexpensive option to robotic surgery, said James D. Geiger, MD, of the University of Michigan in Ann Arbor, who is on the device development team.

FlexDex has a three-axis cuff gimbal that attaches to a surgeon's wrist, isolating the hand from the arm. The device's Virtual CenterTM allows hand and wrist motions to precisely control the articulation of the instrument's jaw.

"It is low-cost, simple, and easy to use, with a short learning curve," Dr. Geiger said.

Both judges were interested in investing, and 73% of the audience agreed. Of the remaining attendees, 14% were possibly interested in investing, and 13% were not interested.

Scanlan International St. Paul, MN

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Highest quality surgical products designed and manufactured by the Scanlan family since 1921. More than 3,000 titanium and stainless steel surgical instruments, including SCANLAN® Super Cut[™] and Premier[™] Scissors, SCANLAN® Legacy Needle Holders and Forceps, Memory Dilators/Probes, new VATS SCANLAN® Dennis Rib Cutter & Rocco Nodule Clamps, and SCANLAN® Single-Use Products.

Siemens Medical Solutions USA Inc 1052 Malvern, PA

Siemens Healthineers is committed to becoming the trusted partner of health care providers worldwide, enabling them to improve patient outcomes while reducing costs. Driven by the company's long legacy of engineering excellence and its pioneering approach to developing the latest advancements, Siemens is a global leader in medical imaging, laboratory diagnostics, clinical IT, and services.

Society of Thoracic Surgeons, The 533 Chicago, IL

The Society of Thoracic Surgeons represents more than 7,200 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 more 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. Stop by Booth 533 or visit www.sts.org to learn more

Sontec Instruments Centennial, CO

Sontec offers headlights, loupes, and the most comprehensive selection of exceptional handheld 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 its booth.

St. Jude Medical Austin, TX

St. Jude Medical is a leading global medical device manufacturer and is dedicated to transforming the treatment of some of the world's most expensive epidemic diseases. The company has five major areas of focus that include heart failure, atrial fibrillation, neuromodulation, traditional cardiac rhythm management, and cardiovascular diseases. Visit sim.com.

The final device presented was an expandable device for creating an easier, quicker, and more efficient anastomosis in aortic prosthetic substitution, presented by Stefano Nazari, MD, of Fondazione Alexis Carrel in Milan, Italy. Both judges and 41% of the audience were not interested in investing in the device. Also, 36% were interested, but not as early investors, and 23% were all in.

The session also featured two debates on the role that new technology plays in cardiothoracic surgery. A surgeon and a radiation oncologist debated whether thoracic surgeons need to do more than just operate as a treatment for early stage lung cancer, or if they should be involved at all in non-surgical treatment. The second debate explored whether new technology was the birth or the death of cardiac surgery.

Also during the session, John C. Laschinger, MD, a cardiothoracic surgeon who is a Medical Officer in the Food and Drug Administration's Division of Cardiovascular Devices, discussed the agency's device review process, while Dr. McCarthy reviewed missteps made by developers during the FDA's review of the MitraClip device.

Stratasys Engelwood, CO

Stratasys is a global leader in 3D printing platforms. From surgical planning to training and education, come by Booth #241 to learn how to incorporate 3D models into your clinical workflow.

Surgical PA Consultants Lynchburg, VA

Since 1991, Surgical PA Consultants has provided professional recruiting and advertising services for cardiac surgical programs seeking physician assistants at a reasonable fee. The company has been clinically active in cardiac surgery and related PA professional societies for 40 years, developing the resources that result in successfully finding qualified PA candidates for cardiothoracic surgical practices.

SurgiTel/General Scientific Corp 116 Ann Arbor, MI

SurgiTel is the manufacturer of premium loupes and headlights sold around the world. Holding a variety of patents, SurgiTel is always on the forefront of vision and ergonomics.

Surrogen, a Recombinetics Company

St. Paul, MN

Recombinetics is the premier gene-editing company that develops precise swine models of congenital and progressive diseases, including neurodegenerative diseases, heart disease, diabetes, and cancer. Recombinetic's proprietary swine models are facilitating more rapid commercialization of safe and effective drugs and medical devices, with lower costs.

Synapse	Biomedical In	C
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SynCardia Systems, Inc 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 endstage biventricular failure. Visit the SynCardia booth for updates on the Freedom® portable driver, 50 cc TAH-t, and destination therapy.

TandemLife Pittsburgh, PA

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CardiacAssist, Inc dba TandemLife exists to deliver Life Support Simplified, with one small pump enabling any type of extracorporeal circulatory support your patients may need. The company's unique pump has enabled it to develop its most innovative product lines to date: TandemLife, TandemLung, Protek Duo, and VoyagerVest.

THANK YOU!

The Society of Thoracic Surgeons gratefully acknowledges the following companies for providing educational grants for the STS 53rd Annual Meeting.

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Medtronic

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STS Silver Benefactors Provided \$10,000-\$24,999

Bard Davol St. Jude Medical **Zimmer Biomet Thoracic** Ethicon

Business Meeting Tonight 5:30 p.m. – 6:30 p.m. Room 310ABC *STS Members Only

Terumo Ann Arbor, MI

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Vascutek, a Terumo company, will display an extensive range of sealed woven and knitted polyester grafts for peripheral, abdominal, and cardiothoracic surgery. Terumo will display the VirtuoSaph® Plus Endoscopic Vessel Harvesting System, Beating Heart, and Surgical Stabilization products, and Terumo® Perfusion Products.

Thompson Surgical

Transonic

Traverse City, MI Thompson Surgical has been a leader in exposure for more than 50 years. Cardiovascular surgeons will benefit from the Thompson Surgical Bolling Retractor, which provides low-profile, stable, uncompromised exposure of the heart structures. The company provides innovative, high-quality systems that deliver safe, versatile retraction.

Ithaca, NY Transonic is the original inventor and innovator of transit-time flow measurement devices for coronary artery bypass grafting surgery, congenital heart disease repair, cardiopulmonary bypass, and extracorporeal membrane oxygenation cases. For more than 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.

O TS Consulting	Inc	941
Las Vegas, NV		

Veran Medical Technologies 917 St. Louis, MO

Veran is a privately held medical device company with a main focus on 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.

O Virginia Cardiac Services Quality Initiative (VCSQI) Virginia Beach, VA

VCSQI is a nonprofit consortium of cardiac practices whose mission is to improve heart care quality, patient experience, and costs. VCSQI's clinical-financial database helps clinicians identify best practices and measure the impact of quality initiatives. Its Support and Alignment Network (SAN2.0) program focuses on preparing practices for the transition to advanced alternative payment models.

Improve Statistical Reporting

uthors who wish to submit manuscripts to The Annals of Thoracic Surgery should attend a session this afternoon led by Annals Editor G. Alexander Patterson, MD and Deputy Editor, Biostatistics, Graham A. Colditz, MD, DrPH, MPH. The Annals Academy: Propensity Score Matching will provide tools for improving statistical reporting in manuscript submissions. Attendees will learn when propensity score matching is appropriate for their datasets and how to present these findings in their manuscripts. The session will be held at 4:15 p.m. in Room 350DEF.

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 Lumsden AB, Morrissey, NJ. Randomized controlled trial comparing the safety and efficacy between the FUSION BIOLINE heparin-coated vascular graft and the standard expanded polytetrafluoroethylene graft for femoropopliteal bypass. J Vasc Surg 2015 Mar;(61):703-712.

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