

STS MEETING BULLETIN

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

TUESDAY

6:30 a.m. – 4:30 p.m. Registration *Room 360 Lobby*

7:30 a.m. – 8:30 a.m. Early Riser Sessions Locations vary; see Program Guide

7:30 a.m. – 8:30 a.m.

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

9:00 a.m. – 3:30 p.m. Exhibit Hall Exhibit Hall A3

9:00 a.m. – 5:00 p.m. Scientific Posters *Hall B3*

8:45 a.m. – 9:00 a.m. Results of the STS TAVR Survey Grand Ballroom

9:00 a.m. – 10:00 a.m. Thomas B. Ferguson Lecture: Ralph W. Muller *Grand Ballroom*

10:45 a.m. – 11:00 a.m. Award Presentations *Grand Ballroom*

11:00 a.m. – 12:00 p.m. C. Walton Lillehei Lecture: Samer Nashef *Grand Ballroom*

12:00 p.m. – 1:00 p.m. Residents Luncheon *Room 370BC*

1:00 p.m. – 3:00 p.m. Adult Cardiac: General *Room 320ABC*

Adult Cardiac: Mitral and Tricuspid Valves Room 310ABC

Congenital: Pediatric Congenital II Room 360BC

EACTS @ STS: Management of Distal Type B Aortic Dissection

Room 330AB Electronic Learning and Innovation in Education Room 361A

General Thoracic: Esophageal Room 351DEF

General Thoracic: Lung Cancer II Room 361BC

1:00 p.m. – 5:30 p.m.

Advanced Therapies for End-Stage Heart Disease Room 350DEF

Patient Safety Symposium: Resilience or Burnout—Do We Have a Choice? *Room 360A*

3:30 p.m. – 4:30 p.m. Cardiothoracic Surgical Education *Room 362A*

Bavaria Urges Out-of-the-Box Thinking

TUESDAY-WEDNESDAY | JAN. 24-25, 2017

he fine line between delivering quality treatment and embracing innovation may sometimes make cardiothoracic surgeons feel trapped quality. Is it better to always be an innovator, adopting promising technology and navigating a difficult learning curve, or to wait for guidelines on that new technology?

"Innovation has become absolutely critical to the survival of our specialty. We must experiment. We must continually adapt. And I know we are up to the challenge," Dr. Bavaria said.

Cardiothoracic surgery should work to build a culture of innovation by emphasizing democracy and freedom of inquiry within the specialty.

"Enlightened leadership is necessary in order to achieve a culture of innovation. Enlightened leadership requires at least some deviation from the principles of autocracy," Dr. Bavaria said.

History shows that great progress comes with the growth of liberty among the commoners, not the leaders, he said.

"Is a culture that requires rigid conformity capable of significant innovation by its people?" Dr. Bavaria asked. "Liberated surgeons can be ingenious. So innovation—or see **BAVARIA**, page 17



Joseph E. Bavaria, MD: 'Innovation has become absolutely critical to the survival of our specialty.'

Richard Prager Elected 2017-2018 STS President

ardiothoracic surgeon Richard L. Prager, MD, from the University of Michigan in Ann Arbor, was elected by the STS membership yesterday evening as the Society's 2017-2018 President.

between conflicting goals. In his

"What if these two fundamentally important

obligations, which go so far as to almost define

us, are at odds with each other? If they are in

fact colliding, then this is a challenge that we

Cardiothoracic surgeons have overcome

similar challenges, such as when they refined

advances of minimally invasive surgery

including thoracic aortic surgery.

quality," Dr. Bavaria said.

and transcatheter aortic valve replacement,

and supported the growth of subspecialties,

training programs, adapted to the technological

"However, one of cardiothoracic surgery's biggest and most pressing challenges, and

indeed a challenge for the entirety of medicine

innovation and an unwavering commitment to

There is even conflict within innovation and

at this point, is the colliding imperative of

must sort out," he said.

Presidential Address Monday, Joseph E.

Bavaria, MD challenged that convention.

"The STS presidency is something that I never considered as a goal or an expectation," said Dr. Prager, Director of the Frankel Cardiovascular Center and the Richard and Norma Sarns Professor

of Cardiac Surgery at Michigan Medicine. "This is very much an honor for me, and it represents the

culmination of my career, as well as an opportunity." With a father who

was an internist and a college job as an

operating room scrub technician, Dr. Prager became interested in cardiothoracic surgery at an early age. "Cardiothoracic surgery seemed like a new frontier and had the biggest challenges," he said. "There was no question what I wanted to do."

After earning his medical degree from the State University of New York in Brooklyn, Dr. Prager trained in general and thoracic surgery at the University of Michigan. He began his surgical career in 1978 at Vanderbilt University in Nashville, Tenn., and eventually returned to Ann Arbor, initially joining the Cardiac and Thoracic Surgical Group at St. Joseph Mercy Hospital. There, Dr. Prager was Medical Director of the Health Care Financing Administration Coronary Artery Bypass Project and Director of Cardiac and Thoracic Surgery. In 1999, he joined the University of Michigan's cardiac surgery faculty.

"I spent half of my career in private practice, specializing in cardiac and general thoracic surgery, and half of my career in academics," explained Dr. Prager. "So, I have experienced two distinct sides or aspects of cardiac and thoracic surgical practice. This experience has helped me understand both realities: complex academic medical centers and private practice scenarios. I'm fortunate to have an understanding of how the qualities of both are critical to our success as a specialty."

An STS member since 1982, Dr. Prager has served on numerous committees and workforces. Most recently, he was the Society's First Vice President. Dr. Prager also has chaired the Council on Quality, Research, and Patient Safety, the Adult Cardiac Surgery Database (ACSD) Task Force, the Task Force see **PRAGER**, page 21

New Officers, Directors Elected

In addition to electing Dr. Prager as the Society's new President, STS members elected several new officers and directors yesterday evening.

Keith S. Naunheim, MD was elected First Vice President and Robert S.D. Higgins, MD, MSHA was elected Second Vice President. Joseph F. Sabik III, MD was elected Secretary, and Thomas E. MacGillivray, MD was elected Treasurer.

The following also were elected or reelected by the STS voting membership last night:

Resident Director: Edo K.S. Bedzra, MD, MBA

International Director: A. Pieter Kappetein, MD, PhD

Canadian Director: Sean C. Grondin, MD, MPH

Public Director: Chris Draft Historian: Douglas J. Mathisen, MD Directors-at-Large: Shanda H. Blackmon, MD, MPH and Joseph C. Cleveland Jr., MD



Prager, MD

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A LARGE LIFE.

Life is different for patients with a **CoreValve[™] Evolut[™] R** TAVR valve

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INDICATIONS The Medtronic CoreValve and CoreValve Evolut R systems are indicated for use in patients with symptomatic heart disease due to either severe native calcific aortic stenosis or failure (stenosed, insufficient, or combined) of a surgical bioprosthetic aortic valve who are judged by a heart team, including a cardiac surgeon, to be at high or greater risk for open surgical therapy (ie, Society of Thoracic Surgeons predicted risk of operative mortality score \geq 8% or at a \geq 15% risk of mortality at 30 days).

CONTRAINDICATIONS The CoreValve and CoreValve Evolut R systems are contraindicated for patients presenting with any of the following conditions: known hypersensitivity or contraindication to aspirin, heparin (HIT/HITTS) and bivalirudin, ticlopidine, clopidogrel, Nitinol (Titanium or Nickel), or sensitivity to contrast media, which cannot be adequately premedicated; ongoing sepsis, including active endocarditis; preexisting mechanical heart valve in aortic position.

WARNINGS *General* Implantation of the CoreValve and CoreValve Evolut R systems should be performed only by physicians who have received Medtronic CoreValve training. This procedure should only be performed where emergency aortic valve surgery can be performed promptly. Mechanical failure of the delivery catheter system and/or accessories may result in patient complications. Transcatheter Aortic Valve (Bioprosthesis) Accelerated deterioration of the bioprosthesis may occur in patients presenting with an altered calcium metabolism.

PRECAUTIONS General The safety and effectiveness of the CoreValve and CoreValve Evolut R systems have not been evaluated in the pediatric population. The safety and effectiveness of the bioprosthesis for aortic valve replacement have not been evaluated in the following patient populations: patients who do not meet the criteria for symptomatic severe native aortic stenosis as defined: (1) symptomatic severe high gradient aortic stenosis – aortic valve area ≤1.0cm2 or aortic valve area index ≤0.6 cm2/m2, a mean aortic valve gradient ≥40 mmHg; or a peak aortic-jet velocity ≥4.0 m/s, (2) symptomatic severe low-flow/low-gradient aortic stenosis – aortic valve area ≤1.0cm2 or aortic valve area index ≤0.6 cm2/ m2, a mean aortic valve gradient <40 mmHg; and a peak aortic-jet velocity <4.0 m/s; who are at moderate or low surgical risk (predicted perioperative mortality risk of <15%); with untreated, clinically significant coronary artery disease requiring revascularization; with a preexisting prosthetic heart valve with a rigid support structure in either the mitral or pulmonic position if either the preexisting prosthetic heart valve could affect the implantation or function of the bioprosthesis or the implantation of the bioprosthesis could affect the function of the preexisting prosthetic heart valve; with cardiogenic shock manifested by low cardiac output, vasopressor dependence, or mechanical hemodynamic support. The safety and effectiveness of a CoreValve or CoreValve Evolut R bioprosthesis implanted within a failed preexisting transcatheter bioprosthesis has not been demonstrated. Implanting a CoreValve or CoreValve Evolut R bioprosthesis in a degenerated surgical bioprosthesis [transcatheter aortic valve in surgical aortic valve (TAV in SAV)] should be avoided in the following conditions. The degenerated surgical bioprosthesis presents with a: significant concomitant perivalvular leak (between the prosthesis and the native annulus), is not securely fixed in the native annulus, or is not structurally intact (eg, wireform frame fracture); partially detached leaflet that in the aortic position may obstruct a coronary ostium; stent frame with a manufacturer's labeled inner diameter <17 mm. The safety and effectiveness of the bioprosthesis for aortic valve replacement have not been evaluated in patient populations presenting with the following: blood dyscrasias as defined: leukopenia (WBC <1000 cells/mm3), thrombocytopenia (platelet count < 50,000 cells/mm3), history of bleeding diathesis or coagulopathy, or hypercoagulable states; congenital bicuspid or unicuspid valve; mixed aortic valve disease (aortic stenosis and aortic regurgitation with predominant aortic regurgitation [3-4+]); moderate to severe (3-4+) or severe (4+) mitral or severe (4+) tricuspid regurgitation; hypertrophic obstructive cardiomyopathy; new or untreated echocardiographic evidence of intracardiac mass, thrombus, or vegetation; native aortic annulus size <18 mm or >29 mm for CoreValve and <18 mm or >30 mm for CoreValve Evolut R per the baseline diagnostic imaging or surgical bioprosthetic aortic annulus size <17 mm or >29 mm for CoreValve and <17 mm or >30 mm for CoreValve Evolut R; transarterial access not able to accommodate an 18 Fr introducer sheath or the 14 Fr equivalent EnVeo R InLine sheath when using Model ENVEOR-US or transarterial access not able to accommodate a 20 Fr introducer sheath or the 16 Fr equivalent EnVeo R InLine sheath when using Model ENVEOR-N-US; sinus of valsalva anatomy that would prevent adequate coronary perfusion; moderate to severe mitral stenosis; severe ventricular dysfunction with left ventricular ejection fraction (LVEF) <20%; symptomatic carotid or vertebral artery disease; severe basal septal hypertrophy with an outflow gradient

Prior to Use Exposure to glutaraldehyde may cause irritation of the skin, eyes, nose, and throat. Avoid prolonged or repeated exposure to the vapors. Damage may result from forceful handling of the catheter. Prevent kinking of the catheter when removing it from the packaging. This device was designed for single patient use only. Do not reuse, reprocess, or resterilize this product. Reuse, reprocessing, or resterilization may compromise the structural integrity of the device and/or create a risk of contamination of the device, which could result in patient injury, illness, or death. The bioprosthesis size must be appropriate to fit the patient's anatomy. Proper sizing of the device is the responsibility of the physician. Refer to Instructions for Use for available sizes. Failure to implant a device within the sizing matrix could lead to adverse effects such as those listed below. Patients must present with access vessel diameters of ≥6 mm for the CoreValve system, ≥5 mm for the CoreValve Evolut R system when using Model ENVEOR-US, or ≥5.5 mm when using Model ENVEOR-N-US, or patients must present with an ascending aortic (direct aortic) access site ≥60 mm from the basal plane for both systems. Implantation of the bioprosthesis should be avoided in patients with aortic root angulation (angle between plane of aortic valve annulus and horizontal plane/vertebrae) of >30° for right subclavian/axillary access or >70° for femoral and left subclavian/axillary access. Use caution when using the subclavian/axillary approach in patients with a patent LIMA graft or patent RIMA graft. For direct aortic access, ensure the access site and trajectory are free of patent RIMA or a preexisting patent RIMA graft.

During Use For direct aortic and subclavian access procedures, care must be exercised when using the tipretrieval mechanism to ensure adequate clearance to avoid advancement of the catheter tip through the bioprosthesis leaflets during device closure. For direct aortic access procedures, use a separate introducer sheath; do not use the EnVeo R InLine sheath. Adequate rinsing of the bioprosthesis with sterile saline, as described in the Instructions for Use, is mandatory before implantation. During rinsing, do not touch the leaflets or squeeze the bioprosthesis. If a capsule becomes damaged during loading or the capsule fails to close, replace the entire system (bioprosthesis, catheter, and CLS). Do not use a catheter with a damaged capsule. After a bioprosthesis has been inserted into a patient, do not attempt to reload that bioprosthesis on the same or any other catheter. AccuTrak DCS Only: During implantation, if resistance to deployment is encountered (e.g., the micro knob starts clicking or is tight or stuck), apply upward pressure to the macro slider while turning the micro knob. If the bioprosthesis still does not deploy, remove it from the patient and use another system. AccuTrak DCS Only: Once deployment is initiated, retrieval of the bioprosthesis from the patient (e.g., use of the catheter) is not recommended. Retrieval of a partially deployed valve using the catheter may cause mechanical failure of the delivery catheter system, aortic root damage, coronary artery damage, myocardial damage, vascular complications, prosthetic valve dysfunction (including device malposition), embolization, stroke, and/or emergent surgery. AccuTrak DCS Only: During deployment, the bioprosthesis can be advanced or withdrawn as long as annular contact has not been made. Once annular contact is made, the bioprosthesis cannot be advanced in the retrograde direction; if necessary, and the frame has only been deployed ≤2/3 of its length, the bioprosthesis can be withdrawn (repositioned) in the antegrade direction. However, use caution when moving the bioprosthesis in the antegrade direction. EnVeo R DCS Only: If a misload is detected, unsheath the bioprosthesis and examine the bioprosthesis for damage (for example, permanent frame deformation, frayed sutures, or valve damage). Do not attempt to reload a damaged bioprosthesis. Do not load the bioprosthesis onto the catheter more than 2 times or after it has been inserted into a patient. EnVeo R DCS Only: Use the deployment knob to deploy and recapture the bioprosthesis. Do not use the trigger for deploying or recapturing because it could cause inaccurate placement of the bioprosthesis. EnVeo R DCS Only: Once the radiopaque capsule marker band reaches the distal end of the radiopaque paddle attachment (point of no recapture), retrieval of the bioprosthesis from the patient is not recommended. Retrieval after the point of no recapture may cause mechanical failure of the delivery catheter system, aortic root damage, coronary artery damage, myocardial damage, vascular complications, prosthetic valve dysfunction (including device malposition), embolization, stroke, and/or emergent surgery. EnVeo R DCS Only: During deployment, the bioprosthesis can be advanced or withdrawn as long as annular contact has not been made. Once annular contact is made, the bioprosthesis cannot be advanced in the retrograde direction; recapture until the bioprosthesis is free from annular contact, and then reposition in the retrograde direction. If necessary, and the radiopaque capsule marker band has not yet reached the distal end of the radiopaque paddle attachment, the bioprosthesis can be withdrawn (repositioned) in the antegrade direction. However, use caution when moving the bioprosthesis in the antegrade direction. While the catheter is in the patient, ensure the guidewire is extending from the tip. Do not remove the guidewire from the catheter while the catheter is inserted in the patient. Use the handle of the delivery system to reposition the bioprosthesis. Do not use the outer catheter sheath. Once deployment is complete, repositioning of the bioprosthesis (e.g., use of a snare and/or forceps) is not recommended. Repositioning of a deployed valve may cause aortic root damage, coronary artery damage, myocardial damage, vascular complications, prosthetic valve dysfunction (including device malposition), embolization, stroke, and/or emergent surgery. Do not attempt to retrieve or to recapture (EnVeo DCS only) a bioprosthesis if any one of the outflow struts is protruding from the capsule. If any one of the outflow struts has deployed from the capsule, the bioprosthesis must be released from the catheter before the catheter can be withdrawn. Ensure the capsule is closed before catheter removal. When using a separate introducer sheath, if increased resistance is encountered when removing the catheter through the introducer sheath, do not force passage. Increased resistance may indicate a problem and forced passage may result in damage to the device and/or harm to the patient. If the cause of resistance cannot be determined or corrected, remove the catheter and introducer sheath as a single unit over the guidewire, and inspect the catheter and confirm that it is complete. Clinical long- term durability has not been established for the bioprosthesis. Evaluate bioprosthesis performance as needed during patient follow-up. Postprocedure, administer appropriate antibiotic prophylaxis as needed for patients at risk for prosthetic valve infection and endocarditis. Postprocedure, administer anticoagulation and/or antiplatelet therapy per physician/ clinical judgment. Excessive contrast media may cause renal failure. Preprocedure, measure the patient's creatinine level. During the procedure, monitor contrast media usage. Conduct the procedure under fluoroscopy. The safety and efficacy of a CoreValve or CoreValve Evolut R bioprosthesis implanted within a transcatheter bioprosthesis have not been demonstrated. However, in the event that a CoreValve or CoreValve Evolut R bioprosthesis must be implanted within a transcatheter bioprosthesis to improve valve function, valve size and patient anatomy must be considered before implantation of the bioprosthesis to ensure patient safety (for example, to avoid coronary obstruction). In the event that valve function or sealing is impaired due to excessive calcification or incomplete expansion, a postimplant balloon dilatation of the bioprosthesis may improve valve function and sealing. To ensure patient safety, valve size and patient anatomy must be considered when selecting the size of the balloon used for dilatation. The balloon size chosen for dilatation should not exceed the diameter of the native aortic annulus or, for surgical bioprosthetic valves, the manufacturer's labeled inner diameter. Refer to the specific balloon catheter manufacturer's labeling for proper instruction on the use of balloon catheter devices. Note: Bench testing has only been conducted to confirm compatibility with NuMED Z-MED II^{TM*} Balloon Aortic Valvuloplasty catheters where CoreValve or CoreValve Evolut R bioprosthesis device performance was maintained after dilation. Data on File.

For EnVeo R DCS: For transfemoral access, use caution in patients who present with multiplanar curvature of the aorta, acute angulation of the aortic arch, an ascending aortic aneurysm, or severe calcification in the aorta and/or vasculature. If ≥ 2 of these factors are present, consider an alternative access route to prevent vascular complications. There will be some resistance when the catheter is advanced through the vasculature. If there is a significant increase in resistance, stop advancement and investigate the cause of the resistance (for example, magnify the area of resistance) before proceeding. Do not force passage. Forcing passage could increase the risk of vascular complications (for example, vessel dissection or rupture). Persistent force on the catheter can cause the catheter to kink, which could increase the risk of vascular complications (for example, vessel dissection or rupture).

POTENTIAL ADVERSE EVENTS Potential risks associated with the implantation of the CoreValve or CoreValve Evolut R transcatheter aortic valve may include, but are not limited to, the following: • death myocardial infarction, cardiac arrest, cardiogenic shock, cardiac tamponade
 coronary occlusion, obstruction, or vessel spasm (including acute coronary closure) • cardiovascular injury (including rupture, perforation, tissue erosion, or dissection of vessels, ascending aorta trauma, ventricle, myocardium, or valvular structures that may require intervention) • emergent surgical or transcatheter intervention (for example, coronary artery bypass, heart valve replacement, valve explant, percutaneous coronary intervention [PCI], balloon valvuloplasty) • prosthetic valve dysfunction (regurgitation or stenosis) due to fracture; bending (out-of-round configuration) of the valve frame; underexpansion of the valve frame; calcification; pannus; leaflet wear, tear, prolapse, or retraction; poor valve coaptation; suture breaks or disruption; leaks; mal-sizing (prosthesis-patient mismatch); malposition (either too high or too low)/ $malplacement \ \bullet \ prosthetic \ valve \ migration / embolization \ \bullet \ prosthetic \ valve \ endocarditis \ \bullet \ prosthetic \ valve \ norm{and}$ thrombosis • delivery catheter system malfunction resulting in the need for additional re-crossing of the $aortic valve and prolonged procedural time {\ \bullet } delivery catheter system component migration/embolization$ • stroke (ischemic or hemorrhagic), transient ischemic attack (TIA), or other neurological deficits • heart failure • cardiac failure or low cardiac output • ancillary device embolization • individual organ (for example, cardiac, respiratory, renal [including acute kidney failure]) or multi-organ insufficiency or failure • major or minor bleeding that may require transfusion or intervention (including life-threatening or disabling bleeding) • vascular access-related complications (eg, dissection, perforation, pain, bleeding, hematoma, pseudoaneurysm, irreversible nerve injury, compartment syndrome, arteriovenous fistula, stenosis) • mitral valve regurgitation or injury • conduction system disturbances (for example, atrioventricular node $block, left-bundle\, branch\, block, a systole), which may require a permanent pacemaker {\ \bullet\ } infection \, (including a state of the system) \, descent for the system of the system of$ septicemia) • hypotension or hypertension • hemolysis • peripheral ischemia • bowel ischemia • abnormal lab values (including electrolyte imbalance) • allergic reaction to antiplatelet agents, contrast medium, or anesthesia • exposure to radiation through fluoroscopy and angiography • permanent disability.

Please reference the CoreValve and CoreValve Evolut R Instructions for Use for more information regarding indications, warnings, precautions and potential adverse events.

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

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David M. Shahian Honored for Groundbreaking Contributions to Cardiothoracic Surgery Quality Improvement

enowned quality improvement expert and public reporting advocate David M. Shahian, MD is the recipient of the STS 2017 Distinguished Service Award, presented yesterday evening at the Annual Membership (Business) Meeting.

"Dr. Shahian has been a visionary, persistent, and tactical genius, who has passionately taken quality improvement in cardiothoracic surgery to the next level," said 2016-2017 STS President Joseph E. Bavaria, MD. "I think he's an incredibly important part of the Society and our mission, with contributions that have been seminal."

An STS member since 1985, Dr. Shahian has served the organization in many capacities, including his 6-year tenure as Chair of the STS Workforce on National Databases and his current role as Chair of the STS Council on Quality, Research, and Patient Safety. He also serves on the National Quality Registry Network, CMS Star Ratings Expert Panel, and the National Quality Forum Board of Directors and Executive Committee.

Dr. Shahian has been involved in health policy issues for more than 20 years, particularly in the areas of performance measurement and public reporting. He helped the Society develop and implement multiple cardiac and general thoracic surgery risk models and composite performance measures. He also has been a leader in the establishment of the Society's acclaimed Public Reporting Program.

"Dr. Shahian is a thoughtful clinician

uropean and North American surgeons will come together for

the annual European Society of

Thoracic Surgeons @ STS session

on Tuesday, when they will share

and analytics expert with a sophisticated understanding of statistics and metrics. These qualities have allowed him to lead the evolution of the STS National Database to its position as the finest clinical outcomes registry in cardiothoracic surgery, if not all of medicine," said 2017-2018 STS President Richard L. Prager, MD. "He recognizes the importance of data and has the ability to expand registries so that they meet surgeon, hospital, government, and industry needs. It's a rare combination, and Dr. Shahian does it with a calmness, maturity, and thoughtfulness that few have."

The STS National Database-which is widely regarded as the gold standard of clinical outcomes registries-was established in 1989 as an initiative for quality improvement and patient safety among cardiothoracic surgeons. STS Public Reporting Online enables Database participants to report, on a voluntary basis, their numeric scores on the surgical quality metrics that Dr. Shahian helped to develop and their corresponding star ratings.

"One of the most important and influential endeavors that the Society has ever embarked on is the STS National Database," explained Dr. Bavaria. "The Database has evolved and improved considerably over the years. Dr. Shahian has been behind all of that, with his decisions and influences being spot on. His selflessness and total commitment regarding our mission toward quality has been unparalleled."

A graduate of Harvard College and Harvard Medical School, Dr. Shahian trained in general surgery at Massachusetts General Hospital

(MGH) and was a fellow in cardiothoracic surgery at Rush University Medical Center in Chicago. For nearly 20 years, he chaired the Department of Thoracic and Cardiovascular Surgery at the Lahey Hospital & Medical Center in Massachusetts. Dr. Shahian currently holds the positions of Professor of Surgery at Harvard Medical School, Vice President of the MGH Center for Quality and Safety, and Associate Director of the MGH Codman Center for Clinical Effectiveness in Surgery.

In addition to his clinical career, Dr. Shahian is the author or co-author of more than 200 peer-reviewed journal articles and book chapters. His research has focused on performance measurement, public reporting, and related health policy issues.

"Dr. Shahian is an enlightened man and surgeon-someone who has put in a lot of time and effort for the advancement of cardiothoracic surgeons and their patients," said Dr. Bavaria.

The Distinguished Service Award, established in 1969, recognizes individuals who have made significant and far-reaching contributions to STS and the specialty.

ESTS @ STS Examines Controversial Issues

Dirk Van

PhD

their perspectives on controversial issues in general thoracic surgery. Experts will discuss adjuvant treatment for thymic malignancies, donors after circulatory death for lung

transplantation, the Raemdonck, MD, role of lung volume reduction surgery for

emphysema, and the surgical management of spontaneous esophageal perforations.

"For this reciprocal session, we selected topics we had not previously addressed. We may agree on certain treatment policies, and we may have different ideas on others. That is always good to see," said ESTS Past President Dirk Van Raemdonck, MD, PhD, who is a member of the STS Workforce on General Thoracic Surgery.

Two International Thymic Malignancy Interest Group board members will share their approaches to adjuvant treatment after complete resection of thymic malignancies.

ESTS @ STS

3:30 p.m. – 5:30 p.m.

Room 351DEF

Tuesday

"For the prognosis of these rare tumors in the mediastinum, it is important that the surgeon does a complete resection. Sometimes, the margins are not so clear, or the tumor has invaded other structures. Some advocate for adjuvant radiotherapy and others do

not," said Dr. Van Raemdonck, of University Hospitals Leuven in Belgium.

Another area where there is disagreement is the use of donors after circulatory death for lung transplantation. Dr. Van Raemdonck will give the European perspective.

"This is close to my heart because I am a lung transplant surgeon, and in Europe, we use many more lungs from donors after circulatory death," Dr. Van Raemdonck said. "In my center, it's nearly one in three cases where the donor is a donor after circulatory death. In North America, it's much less." Although lung volume reduction surgery

"In my center, it's nearly one in three cases where the donor is a donor after circulatory death. In North America, it's much less."

DIRK VAN RAEMDONCK, MD, PHD

in selected patients with severe emphysema gained favor over medical treatment in the late 1990s, the surgery has come under fire. Dr. Van Raemdonck pointed out that after

> the benefit shown by the Emphysema Treatment Trial, many patients with severe emphysema who qualify are no longer being referred for surgical treatment. "Surgery is invasive,

and the patient may have a prolonged air leak and need to

stay in the hospital for 2 weeks. So, of course, everyone is looking at more minimally invasive bronchoscopic techniques," said Dr. Van Raemdonck, adding that endobronchial treatment has not proven to be as effective as surgical volume reduction.

The last section will delve into the surgical management of spontaneous esophageal perforation.

"We often can get these patients through their perforations by conservative treatment with antibiotics, but some surgeons use stents in the esophagus to block the leak," Dr. Van Raemdonck said.

The session co-moderators are Janet P. Edwards, MD, of the University of Calgary in Alberta, Canada, and ESTS President Jaroslaw Kuzdzal, MD, of the John Paul II Hospital in Krakow, Poland.

Author and Quality Expert to Give Lillehei Lecture

he 2017 C. Walton Lillehei lecturer will be Samer Nashef, MD, PhD, author of The Naked Surgeon: The Power and Peril of Transparency in Medicine. He will provide an overview



MD, PhD

of quality initiatives and their unintended consequences. Dr. Nashef is a Consultant Surgeon at Papworth Hospital in Cambridge, United Kingdom. He practices all types of cardiac surgery, with a special interest in

and operations for

problems in adults.

He has many

congenital heart

minimally invasive coronary bypass, mitral repair, and surgery for atrial fibrillation. He also is interested in surgery of the aorta

C. WALTON LILLEHEI LECTURE Tuesday 11:00 a.m. - 12:00 p.m. Grand Ballroom

research interests, a major one being measuring and monitoring the quality of surgical treatment. Dr.

Nashef co-developed the EuroSCORE risk-assessment system. The Lillehei lecture honors C.

Walton Lillehei, MD, one of the world's preeminent cardiac surgeons who was considered to be the "father of open heart surgery." 🔳

SCHEDULE

continued from page 1 3:30 p.m. – 4:30 p.m.

Late-Breaking Abstracts II Room 320ABC

3:30 p.m. - 5:30 p.m. Adult Cardiac: Aorta II

Room 310ABC Adult Cardiac: Aortic Valve

Room 330AB Congenital: Pediatric Congenital III Room 360BC

ESTS @ STS: Controversial Issues in General Thoracic Surgery-Perspectives From Europe and North America Room 351DEF

General Thoracic: Mediastinal/Pulmonary Room 361A

WEDNESDAY

6:30 a.m. – 9:30 a.m. Registration Room 360 Lobby and Hall B3

7:00 a.m. - 9:00 a.m. STS University Hall B3

9:30 a.m. - 11:30 a.m. STS University (courses repeated) Hall B3



David M. Shahian,

MD

EACTS @ STS:

DISTAL TYPE B

Room 330AB

Tuesday

MANAGEMENT OF

AORTIC DISSECTION

1:00 p.m. – 3:00 p.m.

Ralph Muller to Give **Ferguson Lecture**

alph W. Muller, Chief Executive Officer of the University of Pennsylvania Health System, is the 2017 Thomas B. Ferguson lecturer. His talk is titled

"Specialty Care in an Age of Population Health.'

Muller has had a distinguished career in health care.

From 1985 to 2001, he was President and CEO of The University of Chicago Hospitals and Health System. He also has held senior positions with the



Ralph W. Muller

for the state's

major welfare

programs,

including

Medicaid.

Muller also

currently serves

Commonwealth of Massachusetts, including serving as Deputy Commissioner of the Massachusetts Department of Public

Welfare, where he was the chief operating officer responsible

THOMAS B. FERGUSON LECTURE Tuesday

9:00 a.m. - 10:00 a.m. Grand Ballroom

as a Director of the National Committee for

Quality Assurance and a Commissioner of The Joint Commission.

In his lecture, Muller will examine how to manage complex, chronic patients and will emphasize how specialists, such as cardiothoracic surgeons, can take a broader role in patient care through service lines and disease team approaches to promote care standardization by developing disease protocols and pathways.

The Ferguson lecture was established in 2002 and recognizes Thomas B. Ferguson, MD, one of the few individuals to serve as President of both STS and AATS.

THANK YOU!

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TEVAR Device Indications Expanded for All Type B Aortic Dissections

he US Food and Drug Administration recently expanded indications for two thoracic endovascular aortic repair (TEVAR) devices for the treatment of all classifications of type B aortic dissections, even though TEVAR's efficacy had been studied only for type B acute complicated

dissections. A session developed by STS and the European Association for Cardio-Thoracic Surgery (EACTS) will examine how this ruling has created a seismic shift in the distal treatment of thoracic aortic dissection.

"The FDA usually studies safety and efficacy before

approval. In this particular case, it went with safety only and did not have data showing efficacy, which is usually the European model," explained STS 2016-2017 President and session co-moderator Joseph E. Bavaria, MD. "This is a different strategy by the FDA. That is why this session was designed."

Outcomes from TEVAR on patients with residual type A and other type B dissections

will be collected to determine when it is the best treatment option.

"The FDA probably did the right thing. It is reasonable to have the community of cardiovascular surgeons see these patients and perform these procedures to develop the evidence one way or the other," said

Dr. Bavaria, who is with the University of Pennsylvania School of Medicine in Philadelphia.

The use of the frozen elephant trunk has been adapted over time for more complex type A and B dissections, and Heinz Jakob, MD will share his insights about the progression of this device and its applications. With a device trial starting in the United States for use in acute type A dissections, this talk

is apropos because surgeons have been using off-the-shelf devices, Dr. Bavaria said.

Dr. Jakob, of the University of Essen in Germany, is a pioneer in the use of the frozen elephant trunk in acute type A and B dissections to modify remodeling of the distal aorta, minimizing the development of late chronic type B dissections.

G. Chad Hughes, MD, of Duke University

Medical Center in Durham, N.C., will address the merits of open thoracoabdominal aortic aneurysm surgery versus TEVAR for chronic type B dissections. Dr. Bavaria noted that Duke is one of a few centers performing both procedures.

"This lecture is important because we have significant equipoise in North America and Europe regarding the use of these procedures in the setting of chronic type B dissecting aneurysms," Dr. Bavaria said. "There is no consensus about which is right to do. Dr. Hughes will talk about the nuances and decision making for each solution."

Davide Pacini, MD, of the University of Bologna, Italy, will give his perspective on TEVAR versus medical management for acute uncomplicated type B dissections.

"There is no real robust data to tell us which acute uncomplicated dissections should be treated with TEVAR and which should not be," Dr. Bavaria said. "Dr. Pacini will describe the features that would be favorable for good long-term results."

Dr. Bavaria also added that for the first time, there will be a presentation on the newly designed thoracic aortic surgery section of the STS Adult Cardiac Surgery Database.

CT Surgeons Highly Engaged in TAVR Procedures, Survey Shows

n STS survey has found that 77% of cardiothoracic surgeons are actively involved if a transcatheter aortic valve replacement (TAVR) program exists at their institution.

2016-2017 STS President Joseph E. Bavaria, MD will present an overview of the survey findings at this morning's General Session. The 16-question survey was sent to 2,594 surgeon participants in the STS Adult Cardiac Surgery Database between June 27 and July 7, 2016; 487 (19%) responded.

In 2012, the Centers for Medicare & Medicaid Services issued a National Coverage Determination (NCD) for TAVR procedures. That NCD includes a provision to the effect that "the heart team's interventional cardiologist(s) and cardiac surgeon(s) must jointly participate in the intra-operative technical aspects of TAVR." The goal of the survey was to assess whether-for those cardiothoracic surgeons operating at hospitals where TAVR procedures are performed-an environment exists in which all members of the heart team are able to contribute effectively to the well-being of their patients.

As it turns out, TAVR truly is a multidisciplinary endeavor. A total of 84% responded that both cardiologists and cardiothoracic surgeons bring in potential TAVR patients, and 89% reported that two cardiothoracic surgeons independently examine and evaluate potential TAVR patients. Most respondents reported a TAVR caseload of up to 9 per month (41% had 5-9 cases, and 36% had 0-4 cases).

Intraoperative Technical Aspects of TAVR Performed by Cardiothoracic Surgeons on a Regular Basis



The survey also provided insight into the technical aspects of the operation performed by surgeons. Respondents said that they most often obtain alternative access (89%), perform open repair of femoral vessels, as needed (85%), and obtain femoral artery access (71%). Additionally, 87% of respondents participated in the postprocedural care of TAVR patients.

"Surgeons have been an integral

component of the TAVR phenomenon, but the challenge now is to increase our role and attain lead operator status in many cases," Dr. Bavaria said.

For more on this important survey, make sure to attend the General Session at 8:45 a.m. in the Grand Ballroom. A roundtable discussion on the topic also will be available on the STS YouTube channel later this year.

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Caregivers Debate Treatment Options for Dying Down Syndrome Patient



Jessica M. Turnbull, MD makes a point during the Ethics Debate Monday.

he prognosis for 8-year-old Angela Downing is bleak. Born with trisomy 21, her severe heart disease has run the gamut with an atrioventricular canal defect, moderate mitral insufficiency, and a failing left ventricle. Seven days after her valve replacement, she failed to wean from extracorporeal membrane oxygenation (ECMO) due to her poor left ventricular function. She underwent re-exploration for bleeding, difficulty gaining adequate heparinization, and thromboemboli in several fingers and toes.

Her situation is tenuous, and her parents want "everything done." Her surgeon must meet with the parents about whether to embark on a ventricular assist device (VAD)-transplant pathway or remove the child from lifesustaining therapy.

Minoo N. Kavarana, MD and Jessica M. Turnbull, MD took opposing views on this difficult situation during yesterday's Ethics Debate: When a Child's Heart Is Failing. Prior to their debate, they shared what they planned to discuss.

Dr. Turnbull, an ethicist and pediatric intensivist at Vanderbilt University in Nashville, advocated for withdrawing ECMO, and Dr. Kavarana, a pediatric cardiac surgeon at the Medical University of South Carolina in Charleston, argued to replace ECMO with a VAD as a bridge to heart transplantation.

"This is a horribly unfortunate situation," Dr. Turnbull said. "Complicating the whole matter is that there is still equipoise in the transplant community about whether transplanting kids with chromosomal abnormalities is the right thing to do, given their limited life expectancies. They will be dependent on caregivers for probably the entirety of their lives."

Dr. Turnbull speculated that the child would be left with a poor quality of life post-transplant.

"We sometimes don't have time to consider when a kid's not doing well, so we hedge our bets, and we put them on ECMO," Dr. Turnbull said. "We try to do the right things for these kids, but that leads to a lot of harm without the potential of appreciable benefits. Instead of going to a VAD and a transplant, her course should be transitioning to one of comfort and likely withdrawal of life-sustaining therapy."

Dr. Kavarana noted that children with Down syndrome live 50 to 60 years and often have good support from family at home.

"You have to decide if you withhold the same therapy that you would offer a non-Down syndrome 8-year-old," said Dr. Kavarana, noting that the child's size merits the use of an implantable intracorporeal VAD. "Until we determine futility, we would not withhold a heart transplant. We clearly have not demonstrated futility. She's just 7 days from her surgery on ECMO, which would be a perfect time for a VAD transition."

However, it is difficult for Angela to be compliant. She often removes the CPAP mask she was prescribed at age 4 to ameliorate her obstructive sleep apnea.

"I know her caregivers are doing the best they can, but when we're talking about a VAD and a heart transplant, we're asking our families to take on increasingly complicated levels of care at home," Dr. Turnbull said. "I think it does a disservice to our kids and our families when we offer therapies that are arduous to carry out at home and then will not yield the best outcome possible. It's a heartbreaking situation to have a patient like this.

"Despite the fact that she has lovely, amazing parents who love her very much, and despite the best efforts of the medical team, we've unfortunately run out of options. I think withdrawing life-sustaining therapy isn't killing. I think it's transitioning to comfort. Her path was set when she had a mitral valve that couldn't sustain her for as long as we needed it to sustain her."

For Dr. Kavarana, doing nothing would be wrong.

"I think you can improve this child's heart failure symptoms and ease her suffering. It would be withholding care for a child who potentially could be resuscitated or weaned off ECMO," Dr. Kavarana said. "Clearly, there is an ethical dilemma when it comes to solid organ transplantation and patients with disabilities. There is no doubt about that."



Quality Versus Access Dilemma

B ringing quality cardiothoracic surgical care to underserved regions is rife with challenges. Managing costs, staffing, training, equipment needs, and follow-up care are overwhelming concerns. These are compounded when a lack of access hinders patients from getting treatment. Quality, access, financial, and ethical considerations also are paramount issues when providing cardiothoracic surgical care in the midst of a humanitarian crisis.

Monday's International Symposium examined the quality versus access debate for underserved regions and for countries responding to refugees who have fled en masse.

The Symposium kicked off with presentations comparing the costs and benefits of regionalized cardiothoracic surgical care and localized care in lowervolume centers.

"People in some areas of the world have a great distance between where they live and where they can access care," moderator A. Pieter Kappetein, MD, PhD, of Erasmus Medical Center in Rotterdam, the Netherlands, said in an interview prior to the Symposium. "This is not limited to developing countries. It is also true for the Western world. You can strive for the best and the most excellent center of excellence, but that's not always possible."

Although some argue that low-volume centers have good outcomes, others say highly specialized centers are needed because cardiac surgery patients are complex, Dr. Kappetein said. The speakers shared their experiences setting up sustainable specialized centers in Nepal and South Africa.

Another speaker gave his take on the quality, access, financial, and ethical challenges involved in the Syrian refugee crisis.

"About 65 million people have been displaced from their homes; 21.3 million of them are refugees for whom flight is virtually necessary—involuntary victims of politics, war, or natural catastrophe. Surgeons face challenges in determining how we can help," Dr. Kappetein said.

The session concluded with a presentation on the global challenge of treating noncommunicable diseases, including cardiothoracic diseases.



A. Pieter Kappetein, MD, PhD discusses challenges in delivering quality care to remote regions.



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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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Presenters Meet the Media in STS Press Conferences

The Society will host three press conferences on Tuesday highlighting some of the exciting research being presented at the STS 53rd Annual Meeting. The press conferences will take place at 10:00 a.m. in in Room 352B.

Two-Year Echocardiographic and **Clinical Outcomes in 937 Intermediate** Patients Undergoing Surgical Aortic Valve Replacement From the PARTNER 2A Study

Speaker: Vinod H. Thourani, Emory University, Atlanta

Parent Preferences Regarding Public **Reporting of Outcomes in Congenital** Heart Surgery: A Cross-Sectional Survey of Parents of Children With Congenital Heart Disease

Speaker: Mallory Irons, Hospital of the University of Pennsylvania, Philadelphia

Lung Cancer Screening in the Community Setting: Challenges for Adoption Speakers: Doraid Jarrar, Pearlman School of Medicine at the University of Pennsylvania, and Simran Randhawa, Einstein Healthcare Network, Philadelphia

ELEC LEAF INNO EDU Tues 1:00

same page," said Mark S. Allen, MD, STS Past President and Chair of the STS Workforce on E-Learning and Educational Innovation. Presentations will explain how

program directors can use the LMS to create curricula, make assignments, and track resident progress. Dr. Allen, of the Mayo Clinic in Rochester, Minn., will moderate the session with Edward D. Verrier, MD, of the University of Washington in Seattle.

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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

STS Helps Standardize Curriculum Development

new Annual Meeting session will highlight the many features of MD, of the University the Society's expanded learning management system (LMS), which incorporates the Thoracic Surgical Curriculum and can help program directors develop resident education curricula within their existing programs.

"This is the future of cardiothoracic surgical education. This is an attempt to standardize the educational curricula and get everybody across the country on the

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of Texas MD Anderson Cancer Center in Houston, will explain how the LMS can be used to develop a curriculum. Stephen C. Yang, MD, of Johns Hopkins University School of

Ara A. Vaporciyan,



Medicine in Baltimore, will give a presentation focusing on the expansive content in the LMS, which has been developed from textbooks, videos, published articles, and lectures.

"The more than 3,000 multiple-choice questions have been tagged to various topics in the curricula. When a resident reads about a subject, such as mitral valve surgery, he or she can click a button, and the system will randomly assign a number of mitral valve questions to answer," Dr. Allen said.

The LMS can be used to track the progress of residents in meeting Accreditation Council for Graduate Medical Education milestones. Nahush A. Mokadam, MD, also from the University of Washington, will discuss those features in a talk about the eMTRCS Milestone Application. Every 6 months, program directors are required to report each resident's

"This is the future of cardiothoracic surgical education." MARK S. ALLEN, MD

milestone status to the ACGME.

"When a resident reads something or takes a quiz, it is tagged into each milestone, and program directors are given a report on how each resident is doing," Dr. Allen said.

Another presentation will review the Resident-Faculty Feedback Application, developed by Shari L. Meyerson, MD, of Northwestern University Feinberg School of Medicine in Chicago. She will share how faculty can use the iPhone app to follow up with residents and evaluate their performances.

"We don't always do a good job giving feedback," Dr. Allen said. "At the end of a surgery when we talk to the patient's family and do paperwork, we don't have a chance to sit down with the residents. Resident surgeons can use this app to send a text message to the staff working with them. The staff then can grade the residents on performance, which goes into milestones."

Tricuspid Regurgitation After TAVR Linked to Increases in Mortality, Readmission

ild or greater tricuspid regurgitation (TR) was found in more than 80% of transcatheter aortic valve replacement patients, according to a study based on data collected from the STS/American College of Cardiology TVT RegistryTM. "Increasing degrees

of TR are associated

with worse survival

and higher rates of

TR is independently

decreased survival in patients with preserved

left ventricular ejection

fraction," said lead

associated with

readmission, and severe



McCarthy, MD

author Fenton H. McCarthy, MD, of Penn Medicine at the University of Pennsylvania in Philadelphia.

The study is the largest examination of the prevalence and impact of TR on patients who have received replacement aortic valves. It focused on 1-year mortality, heart failure readmission, in-hospital major adverse cardiac events (MACE), and stays in the intensive care unit and the hospital. The results of the study will be among six abstracts and a debate presented in a Tuesday session. Of the patients with

tricuspid regurgitation, 56% had mild TR and 5% had

severe TR. Each increase in the grade of tricuspid regurgitation was associated with

ADULT CARDIAC: AORTIC VALVE Tuesday 3:30 p.m. - 5:30 p.m. Room 330AB

increases in use of cardiopulmonary bypass, longer ICU and hospital stays, new dialysis, inhospital MACE, and increased inhospital mortality. "The most

surprising and important findings of this study are that even moderate TR was associated with increased mortality and readmission at 30 days, 6 months, and 1 year," Dr. Fenton said. "The findings may help patients and the heart team decide on an approach to treating severe symptomatic aortic stenosis in patients with concomitant tricuspid regurgitation."





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Speakers Offer Strategies for Extinguishing Physician Burnout

urgeons are known for their attention to detail, work ethic, and commitment to patients, but these traits can lead to feelings of failure and result in burnout.

The ramifications are far-reaching. A 2008 American College of Surgeons survey found 40% of surgeons fit the diagnostic criteria for burnout, 30% screened positive for depression, 28% had a mental quality of life score more than half a standard deviation below the United

The Society

of Thoracić

Surgeons

States population norm, and 15% had thoughts of taking their own lives.

> Beyond these personal burdens, a 2010 ACS survey on burnout and selfreported medical errors found 9% of surgeons reported that they made



Susan D. Moffatt-Bruce, MD, PhD, MBA

a major medical error in the past 3 months, with the greatest contributing factor being a lapse in judgment.

Speakers at the Patient Safety Symposium, "Resilience or Burnout—Do We Have a Choice?" will explore the causes and

consequences of burnout, as well as methods to mitigate its impact.

"We all recognize as surgeons, particularly cardiothoracic surgeons, that a lot of external forces influence how we have to perform and



are portrayed. It's exhausting," said session moderator Susan D. Moffatt-Bruce, MD, PhD, MBA. "We'll look at how we can help make our surgeons healthier. To do that, they need to have the right amount of resilience and mindfulness."

A co-author of both ACS studies, Charles M. Balch, MD, PhD, of the University of Texas MD Anderson Cancer Center in Houston, is one of four symposium presenters. Dr. Balch is a surgical oncologist and will discuss workrelated stress and burnout in surgery.

"He understands the pressures and stresses that lead to burnout for surgeons," said Dr. Moffatt-Bruce, of The Ohio State University Wexner Medical Center in Columbus.

Wayne M. Sotile, PhD will provide

PATIENT SAFETY SYMPOSIUM Tuesday 1:00 p.m. – 5:30 p.m.

Room 360A

techniques to help attendees improve their resilience. A physician life coach, he runs the Sotile Center for Resilience in Davidson, N.C., which provides clinical and counseling services

counseling servic to physicians and medical organizations. After a question-and-answer period, Steven G. Gabbe, MD will explain how institutions can address physician burnout. Dr. Gabbe is the former CEO of Wexner

Medical Center. "Many people in the room will be leaders, and Dr. Gabbe will share how they can support their physicians to help them be successful," said Dr. Moffatt-Bruce, a member of the STS Workforce on Patient Safety.

Maryanna Klatt, PhD, a professor of clinical family medicine at Wexner, will share her expertise. She currently leads a course on workplace mindfulness-based interventions to reduce stress levels in the medical center's surgical intensive care units. A yoga expert, Dr. Klatt employs stretching, meditation, yoga, and other activities to improve resilience in stressful situations.

"Surgeons are not alone, and this is a real problem. However, there are some techniques and tools that address burnout and can improve resilience and mindfulness," Dr. Moffatt-Bruce said. "We all went into health care, and particularly surgery, because we wanted to help patients. Now, I think we have to focus on our own wellness as surgeons, so we can continue providing the highest level of care possible for our patients."

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Photo Gallery

The Exhibit Hall was open at the STS 53rd Annual Meeting Monday, and attendees were able to peruse the scientific posters and visit with vendors. Elsewhere, Joseph E. Bavaria, MD greeted members after his Presidential Address. On Sunday, residents competed for the STS Jeopardy championship, with the team from India emerging victorious.













Question of the Day

What has been your favorite presentation so far?



inspirational to see how modifying surgical techniques can make a difference. Jeremiah Martin, MD

Southern Ohio Medical Center Portsmouth, Ohio



"There was a session about CABG-the natural history of patients with moderate disease-that was useful. Also, the Presidential Address was very interesting. Dr.

and what he has done during the year has been

Jahnzaib Idrees, MD Cleveland Clinic Cleveland, Ohio

Bavaria is renowned,

very impressive."



interested in presentations that apply to aortic arch surgery and thoracic aorta with TEVAR, and hybrid procedures. The one that stands

"I am particularly

out was on current management options for arch pathology." Robert Gasior, MD

Mercy Hospital & Medical Center Merrionette Park, III.

BAVARIA

continued from page 1

importantly, early adoption of innovation-is an imperative.'

Moving to the issue of quality, STS has been a leader in this area with its longestablished collection of raw outcomes metrics, risk-adjusted metrics, and updated riskadjustment models.

"The STS National Database has had a long evolution toward improving its ability to generate meaningful measures that can discriminate and point to a 'quality' program," Dr. Bavaria said, but he added that using complex data to create simple grades is a challenge. "Are the risk-adjustment models strong enough? Do they penalize or reward larger, tertiary institutions doing more complex cases?"

There is struggle within the conflict to measure quality that requires new adjustments, he said.

"We need simplicity in outcomes reporting, but the reality is that outcomes reporting is, indeed, very complicated and requires a certain sophistication for accuracy," Dr. Bavaria said, while acknowledging the importance of public reporting.

"Remember, we make the boxes. We construct those boxes that constrain our thinking."

JOSEPH E. BAVARIA, MD

"We will have to walk the fine line between the public's increasing insistence on the right to know versus our duty and responsibility toward our cardiothoracic surgical tribe, as we cannot allow good surgeons and good programs to be misrepresented and perish in the public square," he said, adding that poor outcomes can lead to risk aversion.

Dr. Bavaria suggested exploring the concept of patient-centered and patient-reported outcomes.

"The collision is not necessary if we keep the patient in mind. In this model, we convert the collision into a merger. The patients and their families become deeply involved with the decision making," he said. "By discussing all the treatment options, with full consent, including high-risk and alternative options, we can affect a patient-centered outcome, and risk aversion can be moderated.

"Incorporation of patient-reported outcomes or even more advanced patientcentered outcomes into our quality metrics will be difficult. It will require a better understanding of this new concept, as well as proper execution. However, we must move in a direction that manages the conflict between quality outcomes and continued innovation."

Dr. Bavaria concluded his address by urging cardiothoracic surgeons to continue embracing innovation and quality.

"I ask you to search for solutions for yourselves and your programs so that these two important imperatives don't collide. This requires out-of-the-box thinking. But remember, we make the boxes. We construct those boxes that constrain our thinking," he said.

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The information listed here is accurate as of January 17, 2017. The information for these products and services was provided by the manufacturers, and inclusion in this publication should not be construed as a product endorsement by STS.

A&E Medical Corporation

Durham, NC

A&E Medical's products include MYO/Wire® temporary pacing wires, MYO/Wire II sternum wires, MYO/Punch rotating surgical punch, MYO/ Lead disposable patient cable, and DoubleWire high-strength sternal closure system.

Abbott Santa Clara, CA

Abbott (NYSE: ABT) is a global health care company devoted to improving life through the development of products and technologies that span the breadth of health care. With a portfolio of leading, science-based offerings in diagnostics, medical devices, nutritionals, and branded generic pharmaceuticals, Abbott serves people in more than 150 countries and employs approximately 70,000 people.

Abiomed Inc	543
Danvers, MA	

ACUTE Innovations Hillsboro, OR

Furthering its reputation as a leader in the thoracic industry, ACUTE Innovations® introduces a new addition to its portfolio, RibLoc® U Plus 90 Instrumentation. The U Plus 90 Instrumentation system works in conjunction with the RibLoc® U Plus Chest Wall Plating system, which features a unique U-shape design to aid in placement on the rib.

Adako

Santa Ana, CA Leading distributor of Adako massage chairs.

O C Adaptec Medical Devices 1210 Raleigh, NC

Adaptec Medical introduces the Sensica UO System—the only way to obtain automated, ongoing, accurate urine output (UO) data using any standard Foley catheter and drainage system—for critical care and OR use. It's a simple, effective way to identify patients at risk for acute kidney injury and facilitate early intervention. Now, UO can be monitored as a true vital sign for managing patient care.

Aesculap Center Valley, PA

Aesculap Inc, a member of the B. Braun family of health care companies, is the world's largest manufacturer of surgical instrumentation. For more than 138 years, Aesculap has provided customers with surgical instrumentation for ENT, plastic and reconstructive, thoracic, microvascular,

cardiovascular, and laparoscopic surgery.
AK Express
Las Vegas, NV
955

American Association for Thoracic Surgery AF01 (Hall B3) Beverly, MA

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.

O AngioDynamics Latham, NY

AngioDynamics Inc is a leading provider of innovative, minimally invasive medical devices used by professional health care providers for vascular access, surgery, peripheral vascular disease, and oncology. AngioDynamics' diverse product lines include market-leading ablation systems, fluid management systems, vascular access products, angiographic products and accessories, angioplasty products, drainage products, thrombolytic products, and venous products. More information is available at www. AngioDynamics.com.

Animal Technologies

Tyler, TX Animal Technologies is a broad-based, major supplier of tissues, glands, sera, and plasma. The company offers one of the largest selections of tissues, glands, and raw sera in the industry and is a leading supplier of customized medical tissue blocks, especially pediatric-sized tissue blocks.

AtriCure Inc Mason. OH

AtriCure Inc is a medical device company that provides innovative solutions designed to decrease the global atrial fibrillation (Afib) epidemic. AtriCure's Synergy[™] Ablation System is the first and only surgical device approved for the treatment of persistent and longstanding persistent forms of Afib in patients undergoing certain open concomitant procedures.

Bard Davol

Warwick, RI Bard is the market leader in comprehensive soft tissue reconstruction. In addition to this extensive suite of products, the company's BioSurgery franchise is delivering a growing line of enhanced sealants and hemostatic products to complement surgical techniques across thoracic, cardiovascular, and other surgical specialties.

O Baxter Deerfield, IL

Baxter's BioSurgery business unit offers a comprehensive line of biologic and synthetic products that advance surgical care. BioSurgery specializes in intraoperative wound and tissue management and aims to improve surgical practice. The portfolio comprises products for hemostasis, sealing, staple line reinforcement, soft tissue repair, and bone graft substitution.

Baylis Medical Mississauga, Canada

Baylis Medical develops and markets hightechnology medical devices used in the fields of interventional cardiology and interventional radiology. The company's vision is to develop and market innovative medical therapies while improving the lives of people around the world. Baylis has offices in Montreal, Toronto, Boston, and London.

Baylor Jack and Jane Hamilton Heart and Valve Hospital 1041 Dallas, TX

Baylor Heart and Vascular Services at Dallas combines the strength of Baylor University Medical Center at Dallas and Baylor Jack and Jane Hamilton Heart and Vascular Hospital, a joint ownership with physicians, and is nationally recognized for quality cardiac care, leading research, and clinical trials for new treatments and devices.

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BD

AF06 (Hall B3)

San Diego, CA BD is a global corporation helping clinicians and hospitals measurably improve patient care. The PleurX® Catheter System allows patients 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.

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.

🕐 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.

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.

Sunrise, FL

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, manufactures, and distributes innovative, highquality 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 your team members can attend national provider and trainer courses. Course completion results in CSU-ALS Certification are based on a 2-year renewal cycle.

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 Roswell, GA

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EBM

Tokyo, Japan

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.

O 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

ood ony, oa main Surgical 742

Obmain 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.

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. 927

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🕐 NEW EXHIBITORS 🛛 😪 MEETING BULLETIN ADVERTISERS

O Eclipse Loupes and Products Orchard Park, NY

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

340

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 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

C 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.

C LivaNova Arvada, CO

Arvada, CO LivaNova is a world leader in the treatment of cardiovascular disease. Its innovative product

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.

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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, and neurosurgery.

O Medtronic

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

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

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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

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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የ NEW EXHIBITORS 🛛 兌 MEETING BULLETIN ADVERTISERS

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.

PRAGER

continued from page 1

on Quality Initiatives, and the Database Audit Task Force. In addition, he has held leadership positions in other cardiothoracic surgery organizations, including President of both the Southern Thoracic Surgical Association and the Michigan Society of Thoracic and Cardiovascular Surgeons.

As STS President, Dr. Prager is committed to continuing the goals of his predecessors, while focusing on enhancing membership benefits and services. "We will work on becoming a more agile society that has a rich foundation of members and goals, making sure we are the best at representing and facilitating the specialty everywhere," he said.

A longtime participant in and champion of the STS National Database, Dr. Prager said he will continue being one of the Database's strongest advocates. For the future, Dr. Prager said that developing longitudinal follow-up for the ACSD is critical, the evolution of risk models for the Congenital Heart Surgery Database must continue, and increased participation in the General Thoracic Surgery

Scanlan International

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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.

328 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.

Database will be a priority. "Using technology to facilitate data entry for all aspects of our Database also is a top priority, as is utilizing the Database for evaluating new technologies in our field," he said.

With interests in adult cardiac surgery, health outcomes research, patient safety, organizational efficiencies, and education, Dr. Prager has authored or co-authored more than 140 peerreviewed journal articles and book chapters.

"I've been rewarded in every way possible in my profession," shared Dr. Prager. "Now, as President of STS, I have the opportunity, with a great team, to contribute and advance the Society's goals for the benefit of our specialty. I would like cardiothoracic surgeons around the globe to know that The Society of Thoracic Surgeons is their society, and we want to represent and help them in the complex world in which we all practice. All of our members should feel comfortable getting in touch with any of the STS surgeon leaders with suggestions about ways to help the Society represent them better."

Dr. Prager and his wife, Lauren, live in Ann Arbor. They have five children and five grandchildren.

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.

Syna	pse	Biomedical	Inc	
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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

229

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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.

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 Traverse City, MI

Transonic

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.

© 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

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.

Claim 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-hand side of the meeting badge. **Password**: First initial and last name.

Vitalcor, Inc/Applied Fiberoptics 1203 Westmont, IL Vitalcor, Inc is a supplier of medical devices used primarily in cardiothoracic surgery. Since 1975, Vitalcor has provided products that take input from teaching and practicing surgeons to make their practice easier. The company takes pride in offering quality products and providing exceptional customer service. Vitalitec Geister Prymouth, MA 813 Plymouth, MA Nitalitec Geister will be displaying all of its products, highlighting the Peters CV Suture, Enclose II Anastomosis Assist Device, Cygnet Flexible Clamps, Intrack Atraumatic Temporary Clamps and Inserts, and Geister ValveGate and ValveGate PRO line.	Wexler Surgical, Inc329Houston, TXWexler Surgical designs and manufactures a variety of titanium and stainless steel specialty surgical instruments and products for cardiac, vascular, thoracic, and microsurgery. Come see its VATS/MICS instruments and ask about the Optimus Series. Visit www.wexlersurgical.com for more information about products and services, or e-mail sales@wexlersurgical.com.Wolters Kluwer newslersurgical.com114Phoenix, AZ851Austin, TXXenosys USA serves the cardiac, thoracic, and vascular community with innovative products, including portable next-generation LED surgical	at less than 1 oz weight; a full range of custom surgical loupes giving an unbeatable field of vision and depth of focus, all while being light and comfortable; and the Xenosys wireless HD surgical camera system.Zimmer Biomet Thoracic715 Jacksonville, FLFounded in 1927, Zimmer Biomet is a global leader in musculoskeletal health care. The company designs, manufactures, and markets a comprehensive portfolio of innovative thoracic products and treatment solutions for surgeons and patients, including the RibFix™ Blu Thoracic Fixation System and the SternaLock® Blu Primary Closure System.643 Dallas, TX	JANUARY 21–25, 2017 THE OFFICIAL NEWSPAPER OF THE STS 53RD ANNUAL MEETING STS STAFF Robert A. Wynbrandt Executive Director & General Counsel Natalie Boden, MBA Director of Marketing & Communications Heather Watkins Communications Manager © Copyright 2017, The Society of Thoracic Surgeons, 633 N. Saint Clair St., Floor 23, Chicago, IL 60611-3658. The STS Meeting Bulletin is published and distributed for STS by Ascend Integrated Media. All rights reserved. The opinions expressed in this publication are those of the presenters and authors and do not necessarily reflect the views of the Society.
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