AATS

AATS DAILY NEWS

Official newspaper of the AATS 102nd Annual Meeting

Issue 1 Sunday May 15, 2022

In this issue

The AATS 102nd Annual Meeting opens its doors

The first day of the AATS 102nd Annual Meeting saw delegates pack into the Ballroom for a welcome from AATS President Shaf Keshavjee: "Ladies and gentlemen, as the 102nd President of the American Association of Thoracic Surgery, and on behalf of myself and my co-chair, David Jones, Secretary of the AATS, we'd like to welcome you to our 102nd Annual Meeting.

"Welcome to Boston: it's so good to be back together again. It's wonderful to see all the faces and network with all of you and get back to being together and learning together. We have a very exciting meeting ahead!"

The Evidence for Surgical Revascularization, Coronary Bypass in Younger Patients – Essentials Room 309 *Sunday 07:30 AM*

CABG remains superior to PCI for multivessel disease, and here's why

One of the most contentious debates in managing multivessel coronary artery disease that requires revascularization is which treatment is optimal – coronary artery bypass grafting (CABG) or percutaneous coronary intervention (PCI)? In his talk today, David Taggart from The Nuffield Department of Surgical Sciences at Oxford University, UK will answer this head-on, discussing the merits and pitfalls of recent studies and guidelines, and explaining why he believes that best evidence continues to show that CABG remains superior.

Professor Taggart is one of many in his profession to strongly object to the recent downgrading of CABG recommendations for stable multi vessel coronary artery disease, and its bracketing with PCI in the 2021 American College of Cardiology/American Heart Association/Society for Cardiovascular Angiography and Interventions (ACC/AHA/SCAI) Coronary Artery Revascularization Guidelines.[1]

> "CABG benefits continue to accelerate beyond five years, despite significant advances in PCI technology, and new generation stents."
>
> **David Taggart**

Like the AATS and the Society for Thoracic Surgeons, he rejects their interpretation and says there is a lack of recognition that CABG can markedly improve survival and reduce the risk of repeat reinterventions and postprocedural myocardial infarctions in the long term, compared to PCI.

"Those guidelines have strongly changed and downgraded the recommendation for CABG without producing a single new piece of evidence and, at the same time, they ignore the totality of a very strong body of evidence in favor of CABG," he told *AATS Daily News*.

The relatively short follow-up time in studies is one of the pitfalls Professor Taggart will discuss when it comes to interpreting head-to-head clinical trials comparing CABG with PCI. "Were you to assess outcomes over more years – reflecting real life – the benefits of CABG increase and accelerate," he notes.

"CABG continues to have marked benefits over PCI

Continued on page 2

in terms of survival, reduced myocardial infarction, and reduced repeat revascularization (and without a significant increase in the risk of stroke). CABG benefits continue to accelerate beyond five years, despite significant advances in PCI technology, and new generation stents."

Another bias or flaw of trials is they rarely represent the typical coronary patients that doctors see in their line of work. Study subjects will have been carefully selected and will likely have less advanced disease and few comorbidities. Thirdly, adding in recommended medical therapy alongside CABG, which increasingly happens in the real world, can make CABG outcomes more favorable than PCI, stressed Professor Taggart.

During his talk, he will position that the results of a trial called ISCHEMIA – that implied no difference between CABG and PCI – have been misinterpreted.[2]

He explained: "It's been widely seen as a trial of revascularization against best medical therapy, but it wasn't quite like that. It was a trial of an invasive versus initial conservative strategy. But the real confusion has then been implying that all revascularization, whether stent or CABG, had the same effect. It definitely does not."

He argues there are profound differences between CABG and PCI, and they have quite dramatically different effects on outcome. And that when you look at the evidence from randomized trials and from large propensity-matched registries, it is clear that CABG is better for treating multivessel disease. "The effects are even further magnified in patients with diabetes and impaired ventricular function," he added, citing The FREEDOM Follow-on Study.[3]

Crucially, Professor Taggart says CABG has the edge because it does three things that stents cannot. Firstly, CABG places the bypass graft to the mid coronary vessels, so it protects most of the relevant circulation. In comparison, if a stent in the proximal vessel or the adjacent vessel becomes diseased it will lose its revascularizing effect entirely. Secondly, the internal thoracic artery

elutes nitric oxide into the coronary circulation, and that has a positive effect on the coronary endothelium and circulation. Stents do not do that. Lastly, for many patients, stents mean incomplete revascularization, which is linked with a higher risk of subsequent major adverse events and mortality.

"This is why, despite the very rapid and very significant improvement in stent technology, PCI does still not match CABG," commented Professor Taggart. This was recently show in the recent randomized, controlled noninferiority FAME-3 trial with patients with three-vessel coronary artery disease.[4]

"Even using the next generation of drug-eluting stent, and doing the procedure with fractional flow reserve-guided deployment, CABG was still significantly better even at one year."

That being said, that doesn't mean CABG is always the better

> "CABG continues to have marked benefits over PCI in terms of survival, reduced myocardial infarction, and reduced repeat revascularization (and without a significant increase in the risk of stroke)."
>
> **David Taggart**

option, he went on: "There may be good reasons why a patient should be treated with stents. I'm not saying they should never be used." For instance, if the patient is very old and frail with lots of comorbidities and a short life expectancy, PCI could be more appropriate, he noted. Likewise, if there is severe chest deformation or significant scoliosis or the patient's anatomy means revascularization is likely to be incomplete with CABG, opt for PCI. Finally, and crucially it is very important to consider patient preferences once they are aware of all the relevant data.

"Look at the whole clinical picture and use your common sense," concluded Professor Taggart.

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Achieving High-Impact Publication: Insights from JTCVS Editors and Reviewers Room 313 *Sunday 2:00 PM*

JTCVS session explores tips and tricks for achieving high-impact publications

This afternoon plays host to a session that will shine a light on how to succeed in the world of peer-reviewed manuscript submission, taking the audience through key aspects including: manuscript preparation and initial evaluation; assessing high-impact submissions; the peer-review process; the manuscript life cycle; writing reviews; and responding to editor and reviewer comments.

Editor-in-Chief of the *Journal of Thoracic and Cardiovascular Surgery* (*JTCVS*) G. Alec Patterson (Joseph C Bancroft Professor, Washington University School of Medicine, St. Louis, MO, USA) is behind the creation of the session which, with prime positioning in the AATS Annual Meeting program, should offer a stimulating chance to dissect the 'vision' of the journal, its sister publications, and the processes its authors and reviewers can adopt in order to flourish in the field of peer-reviewed publications.

Dr. Patterson has been involved with the *JTCVS* in some shape or form for 30 years. Initially appointed to the editorial board in 1991, a few years later he was asked to be the associate editor for general thoracic surgery, a position he held for more than a decade. "So, I have a long history with the *JTCVS*, and it's good to be back," he told *AATS Daily News*. "It is a premier journal, and has plenty of opportunity for growth, especially with the wonderful innovations occurring in cardiothoracic surgery. And that's true of all disciplines: congenital, cardiac surgery, adult cardiac surgery, and general thoracic surgery."

There is a global movement toward more open-access journal publications, noted Dr. Patterson, and thus he is excited to have the opportunity to further develop *JTCVS Techniques* and *JTCVS Open*. "They are still in their growth phase, but we're very pleased with their progress thus far," he said. "I think that has been a terrific initiative on the part of the AATS."

Importantly, Dr. Patterson stressed that while the *JTCVS* remains the lead journal, the development of *JTCVS Techniques* has meant that many other outstanding papers submitted (particularly those on technical aspects), but ultimately not included, now have a proper forum. "Similarly, *JTCVS Open* is not so much a technical journal, but one that discusses common problems that surgeons face every day," he added.

What is consistent across the journal family is the high-quality, peer-review process. In due course, it may even be that *Techniques* and *Open* have their own independent editorial board from which to review and approve submissions.

Discussing his ambitions as Editor-in-Chief, Dr. Patterson continued: "My goal is to maintain or grow the impact of *JTCVS* parent journal, and at the same time, get those two open-access journals to a place where they are welcome additions to the cardiothoracic community. In addition, one of the things that was critically important to me in assuming this position was to diversify the editorial board at *JTCVS*, and the sister journals. So, we're in the process of changing it further to reflect the diversity of the cardiothoracic surgical community."

Another aspect that Dr. Patterson is keen to focus on is better defining the role of the sister journals *Operative Techniques in Thoracic and Cardiovascular Surgery*, *Seminars in Thoracic and Cardiovascular Surgery*, and the *Pediatric Cardiac Surgery Annual*. "At least in the context of the parent journal, and the two open-access journals," he noted.

"*Seminars* has hosted interesting publications for years, and initially it was in a seminar-style format, where topics of interest could be discussed in detail by contributing authors. However, it has morphed into a publication that publishes original submissions that were not felt to be quite as high impact as would be published in the parent journal. So, I think we've gotten a little bit away from the original goal of *Seminars*. This is a discussion to be had over the next couple of years."

Turning to the core aims of this afternoon's session, Dr. Patterson first underlined its importance, particularly in terms of highlighting the ins and outs of manuscript submission, the review process, and the challenges that might be faced for more junior members of the cardiothoracic community. "The *JTCVS* is a major asset of the AATS, and it needs to be prominently placed within the Annual Meeting program," he said. "For younger surgeons or younger trainees who are interested in academic productivity, scholarship, and publication, this session is an opportunity to understand how the *JTCVS* works.

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>
> **G. Alec Patterson**

"It will outline how papers are transferred, what constitutes a high-impact paper, how papers are reviewed, and how to respond to reviewers' comments (which is not just for younger authors, but some older authors as well)."

Other topics that are important to consider for the future include discussions of statistical analysis techniques and accurate methodology, as

well as how to set up a clinical trial. "Then there is what do we look for in a translational research paper? Are there appropriate controls, and was the analysis done correctly? There's an almost endless number of topics that are important," stressed Dr. Patterson.

On the flip side, while the session has its roots in informing would-be authors, there is also an emphasis on identifying and informing new reviewers. "We constantly need a new supply of reviewers with particular expertise. We don't even know some of these individuals exist until they step forward, so we have an opportunity to get more people involved and make the journal better."

Offering his 'elevator pitch' for the AATS audience, Dr. Patterson commented: "Come along to the session and learn about outstanding, high-impact publications, and how best to get your work out there. There are some astonishingly innovative people in our cardiothoracic community that just need help in getting their information published. That's what we're trying to do with this session."

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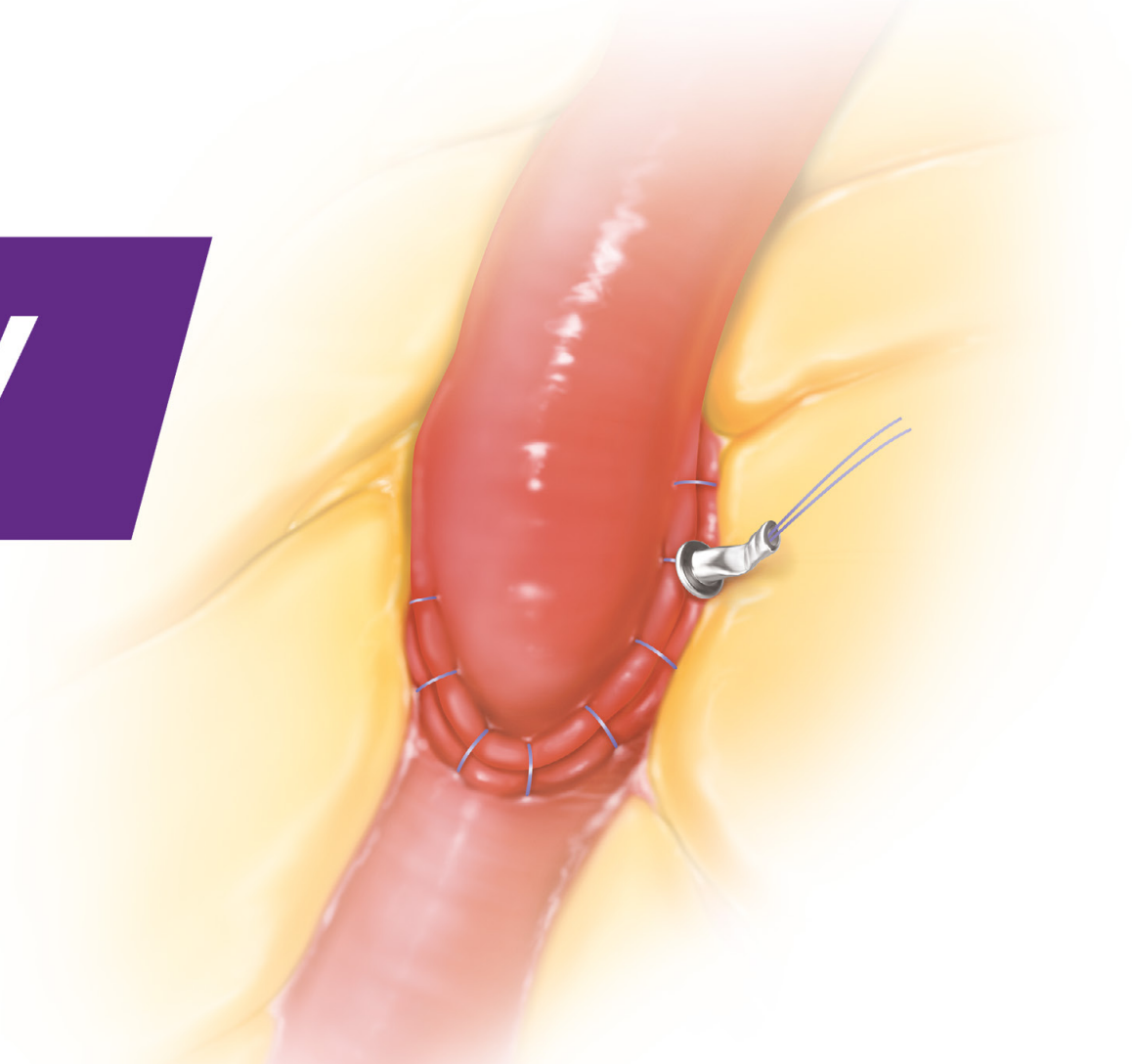

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Congenital Rapid Fire Orals Tech Theater 1, Exhibit Hall *Sunday 12:45 PM*

New insights into gender disparities amongst congenital heart surgeons

New data on gender-related experiences in the congenital heart surgery workforce will be presented this afternoon by Raina Sinha, Assistant Professor of Surgery and Pediatrics at the University of Connecticut School of Medicine and Congenital Cardiac Surgeon at the Connecticut Children's Medical Center, Hartford, CT, USA. In her talk, Dr. Sinha will share some key findings from a recent national survey that has revealed multiple gender-related differences in the experiences of men and women congenital heart surgeons. Dr. Sinha has worked on this survey in partnership with Dr. Jennifer Romano, Professor of Cardiac Surgery and Pediatrics at the University of Michigan and Congenital Cardiac Surgeon at C.S. Mott Children's Hospital in Ann Arbor, Michigan, USA, who was recently elected second vice president of the Society of Thoracic Surgeons.

"It is imperative to promote gender-neutral criteria to enter the field, train and successfully tpractice."

Raina Sinha

Speaking to *AATS Daily News*, Dr. Sinha first set the scene by drawing attention to the male-to-female ratio in congenital cardiac surgery. "There is an extreme gender imbalance amongst cardiothoracic surgeons, with women constituting 8% of the entire thoracic surgery workforce," she said, referring to data from the AAMC 2019 Physician Specialty Data Report.[1] "This gender imbalance is also evident within congenital heart surgery, where only 11% of the surgeons are women.[2]"

Within the field of cardiothoracic surgery as a whole, research has begun to explore the reasons for this gender imbalance. Studies have documented that the gender gap is perpetuated by various factors including disparities in compensation and in opportunities for career advancement, disproportionate scrutiny of women surgeons, and certain 'traditional' views on family dynamics.[3]

Despite the growing understanding of gender imbalances within the broad area of cardiothoracic surgery, there is a lack of published data specifically on the congenital heart surgery workforce. To address this research gap, Dr. Sinha and Dr. Romano designed and conducted the first national survey to examine gender-related differences amongst congenital heart surgeons in particular.

Outlining the rationale behind this work, Dr. Sinha explained that the subspecialty of congenital heart surgery warrants individual consideration in terms of gender differentials. "There are some unique characteristics that may exacerbate difficulties for women here. These include the requirement for additional training and board certification, the traditional 'apprenticeship' model of practice, and an incredibly well-saturated and competitive job market," she stated. "Therefore, our aim was to gather specific data on this workforce to better understand the impact of gender in this context."

The cross-sectional survey was completed by 17 female and 112 male practicing congenital heart surgeons. Outlining the results, Dr. Sinha noted that gender-related differences were observed in several areas. "Differences exist between women and men congenital heart surgeons in training, career development, clinical practice, work and personal life integration, and career satisfaction," she summarized.

Delving deeper into the data, Dr. Sinha drew attention to some striking findings. Over half of the women respondents (53%) reported being discouraged from pursuing a career in congenital heart surgery due to their gender, as compared to 2% of men (p<0.001). The same proportion reported a negative impact of gender upon securing their first job (53% women vs. 2% men, p<0.001). Lack of mentorship was also more frequently reported by women than men (35% vs. 11%, p=0.02).[4]

Further gender-related differences were observed in terms of salary, with more women than men starting on the lower annual salary range of $150K–$250K (60% vs. 35%, p=0.35). Lower annual salaries for women than men were reported at the levels of Associate Professor ($500K–$750K vs $1M–$1.25M) and Professor ($1M–$1.25M vs. >$1.5M); women were also underrepresented in these upper faculty ranks.[4]

Another notable area that Dr. Sinha highlighted was interactions with colleagues. Sixty percent of women reported that colleagues perceived their gender as a negative factor (regarding leadership, clinical ability and surgical capabilities), as opposed to 4% of men (p<0.001). Sexual harassment was also experienced more frequently by women than men, both in training (65% vs. 6%, p<0.001) and in practice (65% vs. 4%, p<0.001).[4]

Commenting on these results as a whole, Dr. Sinha acknowledged the scale and complexity of the issues identified, but also emphasized the potential to use these insights to drive positive change. "The results highlight the challenges regarding recruitment, retention, and overall career trajectory within congenital heart surgery, with women more commonly reporting negative experiences than men," she observed. "Moreover, they present an opportunity for improvement, specifically to address gender inequalities in academic rankings and salaries, along with fostering equal opportunities for career mentorship and sponsorship."

These areas to address have also been identified in previous studies into the broad field of cardiothoracic surgery. Gender differences in mentorship and sponsorship are recognized to have implications for career advancement, and as regards to salary, a 2020 multivariable analysis of cardiothoracic surgeons found that women were more likely than men to earn less than $600,000 and men more likely than women to earn over $800,000 per year.[5] The new findings from Dr. Sinha's team provide further impetus for focusing on these barriers in the specific field of congenital heart surgery.

"Meaningful change will not occur without resolution of the critical workforce concerns raised by men and women – lack of mentorship, inadequate case volumes, job market saturation, and intense levels of scrutiny, all of which our study suggests disproportionately impact women more negatively," she stated. "A paradigm shift is necessary to recognize and eliminate these gender disparities, so that we may attract and retain the most competent surgeons within congenital heart surgery."

Closing the interview, Dr. Sinha pulled out some encouraging data as regards the future outlook. "Regardless of their differences, the majority of congenital heart surgeons, both men and women, would repeat their career choice as well as encourage others to do so," she reported. "This bodes well for the future."

Dr. Sinha next moved on to discuss how to overcome these hurdles. "The first step must be recognition of these gender-related barriers, so we can better appreciate why there are so few women practicing congenital heart surgery, and accept that this isn't simply a 'pipeline' issue," she advised. "Next, it is imperative to promote gender-neutral criteria to enter the field, train and successfully practice, ensuring that these criteria are grounded in objective measures and free of gender bias."

When discussing the topic of gender bias, Dr. Sinha recognized that many of the workplace difficulties identified in this survey are experienced by men as well, albeit to a lesser overall extent. She believes that progress depends on addressing these issues across the workforce.

Jennifer Romano

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International Thoracic Surgical Oncology Summit at the AATS: Novel Diagnostic and Therapeutic Options in Operable NSCLC Room 312 *Saturday 8:00 AM*

False perception of low risk of lung cancer in high-risk group of underserved population

Adherence to repeat annual screening is low, and there is a false perception of low lung cancer risk in those previously screened in a high lung-cancer risk, underserved population, data from yesterday's International Thoracic Surgical Oncology Summit (ITSOS) session revealed. In his presentation, Mark Lee from Temple University Hospital, Philadelphia, PA, USA, stressed that people in this high-risk group also thought lung cancer screening was a one-off activity rather than an annual event.

ITSOS is designed to focus exclusively on thoracic surgical oncology with an emphasis on the multidisciplinary care, advanced surgical approaches and diagnostics, and cutting-edge technologies that are needed to best care for patients with cancers of the lung, esophagus, mediastinum, and pleura. At the Summit, due to be held September 30–October 1 in New York, educational content will be delivered by an international panel of experts via oral presentations from peer-reviewed abstract submissions, invited lecturers, debates, multiple high-quality 'how I do it' videos, and special hands-on sessions where applicants can directly interact with faculty to learn new techniques and approaches.

In yesterday's session at the AATS Annual Meeting, Dr. Lee noted that racial disparities have existed across the entire disease history of lung cancer, but that the population served by his hospital was at higher risk of lung cancer, was less likely to undergo screening, and was less likely to be diagnosed early and undergo surgical or other treatment.

Dr. Lee shared that the population served by Temple Hospital are 51% Black, 85% covered by Medicare or Medicaid, 30% live below the federal poverty level, and 27.4% current smokers, which is higher than the state-wide average.

Describing the lung cancer screening challenge faced at Temple, Dr. Lee pointed out that there was also a low annual follow-up adherence of 23.7% for one year, and only 3% at two years. Previous studies have shown a low level of lung cancer knowledge, with nearly a third believing they were at lower risk than average of lung cancer. "Keep in mind this population has a significant smoking history, and have all undergone lung cancer screening due to their increased risk," he noted.

> "It is crucial for providers to suggest that even after a negative scan, people are high-risk, and need to attend screening."
>
> **Mark Lee**

Screening is known to decrease mortality from lung cancer, but maybe even more beneficial in African American people, said Lee. Annual adherence is lower in African Americans and other underserved populations compared to Caucasians, but the barriers to screening are poorly understood, added Dr. Lee. "Cancer knowledge and perceived level of risk may have a role to play here."

In an effort to shed light on this situation, Dr. Lee and colleagues asked whether there were any racial differences in the barriers to annual lung cancer screening adherence. He looked at a study population of people with a previously negative lung cancer screening result, between 2014–2020, and who were non-adherent to annual lung cancer within the past 15 months.

Patient perceptions and knowledge were assessed using a validated survey tool asking about health literacy, lung cancer knowledge, and perceived risk. Results were stratified by race, educational attainment and income level. Average age was 65.6 years, 70% were African American, 62% earned under $25,000, and 68% had completed high school or less.

Reporting the results, Dr. Lee said that on lung cancer knowledge, for example the degree of understanding of negative screening results, the chance of getting lung cancer, and the benefits of early treatment, "Overall the scores were pretty low at 5.8/10, and racial and socio-economic differences were observed with African American patients scoring less than Caucasian patients. Those with less than high school education scored lower, and those with an income under $25,000 also scored lower."

Health literacy was self-reported on a score of 1 to 5, and was determined in response to, for example, how comfortable someone is in filling out medical forms by themselves? "Overall scores were high, from 4 to 5, and there were no significant differences seen between groups," said Dr. Lee.

Regarding perceived level of risk, in response to questions including 'How likely do you think it is that you will develop lung cancer in the future, and in comparison to the average person your age?', the scores were low to moderate in all groups, ranging from 4.1 to 4.6 out of 7, with no significant differences between the groups, reported Dr. Lee.

He also noted that these participants had already navigated barriers to screening once: "These included barriers at provider level, time constraints, access to care, or just awareness that lung cancer screening is an option, and despite this, adherence to repeat screening is low."

Participants also had good records of attendance with their primary care providers for a range of health issues. "This suggests there is a new set of barriers to annual adherence compared to those associated with initial screens," said Dr. Lee.

The researchers found that self-reported health literacy was high, but there was a false perception of low risk of lung cancer across all groups. "So, it is crucial for providers to suggest that even after a negative scan, people are high-risk, and need to attend screening."

> "We do send out reminders for annual screening, but sometimes they are unnoticed or just get ignored, which is why it is crucial that people are more aware of their perceived risk of lung cancer."
>
> **Mark Lee**

He also pointed out that there was a place to improve lung cancer knowledge among underserved populations, especially given the higher incidence of lung cancer and higher smoking rates in underserved populations.

Discussant, Betty Tong, from Duke University Medical Center, Durham, NC, USA, addressed the low perceived risk and poor lung cancer knowledge, and how lung cancer screening programs should emphasize patient education and target this toward the predominantly African American community.

Asked about the barriers to uptake, Dr. Lee remarked that, "We do send out reminders for annual screening, but sometimes they are unnoticed or just get ignored, which is why it is crucial that people are more aware of their perceived risk of lung cancer."

Dr. Tong asked about the reasons for not showing up to annual scans, suggesting that, "Maybe the reasons for not returning for annual scans is because they have jobs and the timing doesn't work, or they can't pay for parking."

Dr. Lee remarked that, "Some just forgot, but others didn't realize it was an annual screening process, thinking that they'd be screened once and that was it for them. Also on employment, only around 10% of our study population were employed, with 88% unemployed or retired. We're just not sure of their reasons for not returning, and we're trying to understand this through patient perceptions."

In the closing discussion after his talk, an interesting comment arose on how questions on risk are presented to these patients. "We know they are high-risk patients because we do this for a living, but when they earn less than $25,000 per year, their idea of risk might be where the next meal comes from. A 1% risk of lung cancer from a screening program might not be seen as high risk at all when compared to the rest of their life."

Concluding, Dr. Lee reiterated that there was a pressing need for more lung cancer screening education.

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SESSION HIGHLIGHT

Perioperative Care Summit

Sunday, 7:30 AM, Room 206

MODERATORS

Nevin Katz John Hopkins and The George Washington University Hospital

J. W. Hayanga West Virginia University

During this session, we will delve into a series of topical issues in perioperative care that include the impact of atrial fibrillation, neurophysiological monitoring in the prediction of stroke after cardiac surgery, risk factors for poor outcomes in patients weaned off extracorporeal support, and the interface between socioeconomic distress and failure to rescue in cardiac surgery.

A debate on the ethics of withdrawal of care will provide the backdrop for the keynote address by the immediate former Deputy Secretary to address the legality and ethics of end-of-life care through the lens of a federal administrator.

Nevin Katz

J. W. Hayanga

Program:

Perioperative Keynote Lecture: Withdrawing Mechanical Circulatory Support: Ethics and Legality
Speaker Eric Hargan *Former United States Deputy Secretary of Health and Human Services*

Atrial wall thickness and different configurations of pacing wires directly impact the effectiveness of biatrial overdrive pacing in preventing postoperative atrial fibrillation
Invited Discussant Niv Ad *Adventist White Oak Medical Center*
Abstract Presenter William Wang *Scripps Memorial Hospital*

Intraoperative Neurophysiological Monitoring can Predict Postoperative Stroke in Cardiac Surgery
Invited Discussant Arman Kilic *Medical University of South Carolina*
Abstract Presenter Cara Maya Fleseriu *University of Pittsburgh School of Medicine*

Outcomes and Risk Factors of Cardiogenic Shock Patients Successfully Weaned from Extracorporeal Life Support
Invited Discussant Christian Bermudez *Hospital of the University of Pennsylvania*
Abstract Presenter Ashley Zhang *Columbia University Vagelos College of Physicians & Surgeons*

Socioeconomic Distress is Associated with Failure-to-Rescue in Cardiac Surgery
Invited Discussant Robin Varghese *Mount Sinai Health System*
Abstract Presenter Raymond Strobel *University of Virginia*

Pro-Con Debate: Physicians Have Autonomy to Withdraw Care Against the Wishes of the Family
Panelists Robert Sade *Medical University Hospital*
Robert Hawkins *University of Michigan*

TAVR Masterclass Room 302 *Sunday 4:15 PM*

TAVR for low-risk patients: the data tells the real story

The question of whether to perform transcatheter aortic valve replacement (TAVR) in low-risk patients will be the focus of a fascinating talk this afternoon by Michael J. Reardon, Professor of Cardiothoracic Surgery and the Allison Family Distinguished Chair of Cardiovascular Research at Houston Methodist Hospital (TX, USA). "TAVR is exploding almost exponentially, and now more TAVR is performed than surgical aortic valve procedures in the United States," he said. "Many have started to wonder what's going to happen as TAVR continues to move into the realm of low-risk patients, and whether all low-risk patients are really appropriate candidates for TAVR?"

Professor Reardon runs the structural heart program at the hospital, as well as being the principal investigator on several important research trials looking at TAVR. Concurrently, he's a cardiac surgeon who has spent more than 35 years doing surgical aortic valve surgery. "So, I have a broad perspective on both sides of the surgical transcatheter field," he told *AATS Daily News*.

Professor Reardon hopes to give delegates a feel for current evidence on the optimal strategy in low-risk patients with severe aortic valve stenosis. He will outline the four main randomized clinical trials for TAVR and low-risk patients. The first two suggest no difference in mortality between two groups. The Nordic NOTION trial,[1] at sites in Finland, Norway and Sweden, was a very early trial using the original CoreValve (Medtronic, USA), randomized with surgery patients over 70 years of age (but considered at lower risk of surgery). It now reports on eight years of data. The newest randomized trial, UK TAVI, assessed clinical effectiveness and cost-utility of TAVR compared with conventional surgical aortic valve replacement in patients with severe symptomatic aortic stenosis.[2] The trial included those at low operative risk.

> "One might assume that every low-risk patient should now have TAVR, but the data doesn't support that."
>
> **Michael J. Reardon**

Professor Reardon will focus primarily on two US trials, PARTNER 3[3] and Evolut Low Risk,[4] the largest randomized control trials to date, both which reached similar conclusions. "One might assume that every low-risk patient should now have TAVR, but the data doesn't support that," he said. "I want people to understand how these two trials were constructed. What data was looked at, and what was not looked at."

The fact is, certain populations were excluded in the trial protocol itself, including those with bicuspid aortic valves, patients with significant coronary artery disease or unfavorable anatomies, and those requiring associated procedures such as mitral valve repair. "Therefore, we've already excluded a large portion of the people that will present with severe aortic stenosis," reasoned Professor Reardon, and some of those groups are quite significant.

For example, for a group between 65–75 years old – deemed low-risk patients – bicuspid aortic valves would account for almost 50% of the population. "It's important to understand that bicuspid valves weren't treated in the randomized trial," he said. "There's no randomized trial of bicuspid valve TAVR versus surgery."

When trial protocols are set up, a local site might identify a patient with severe symptomatic aortic stenosis, considered low risk for surgery, but they may be rejected later. "At the national selection level, they are eliminating a lot of people, so it's important for surgeons to understand who is included, and who is not," explained Professor Reardon. In the PARTNER 3 trial, 34% of the patients were excluded from the trial at the national level. In Evolut Low Risk, 14.8% were excluded. "They are clearly carefully selecting these patients," he added.

While it's tempting for those surgeons who are worried about losing surgical or valve procedures to TAVR to use this data as a justification for surgery, Professor Reardon asks for a balanced approach. "We need to understand the data so that we can counsel our patients as to what is reasonable to consider," he said. Both trials will be followed for 10 years, so there will be plenty of longer-term data. "That will really help better inform us about the decision-making, as we're looking at younger patients who are going to live longer, need a procedure, and need to choose which procedure might be better for them," he explained.

Interestingly, fairly early data from a randomized clinical trial presented by Professor Reardon at the American College of Cardiology's 71st Annual Scientific Session in April suggests for the first time that the durability of TAVR is better than surgery after five years. "This data is a warning," said Professor Reardon. "As these trials become longer-term, the scales may start to weigh more in the favor of TAVR over surgery even in the younger, low-risk patients."

> "TAVR is exploding almost exponentially, and now more TAVR is performed than surgical aortic valve procedures."
>
> **Michael J. Reardon**

As TAVR continues to grow in usage, it is essential that doctors are in possession of all the facts – especially long-term data – said Professor Reardon. "Understanding data is very important for you as a surgeon, to be able to counsel your patients and maintain your practice," he underlined, adding that surgeons will increasingly be faced with younger low-risk patients wanting to have TAVR. "If you just tell them they need surgery without explaining why, they may go and see somebody else. You need to be able to explain to them why you think they're better off with surgery, based on the data that exists."

He concluded: "This talk will help you understand that data. TAVR is here to stay, worldwide, and it's not going to go away."

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Better Outcomes
don't always come at high costs

LSS
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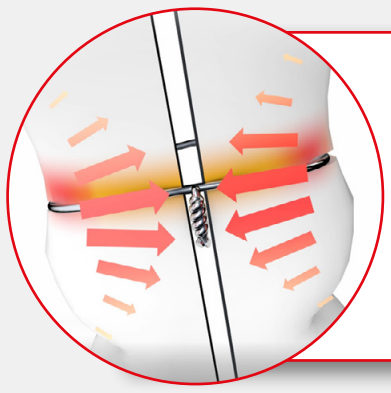
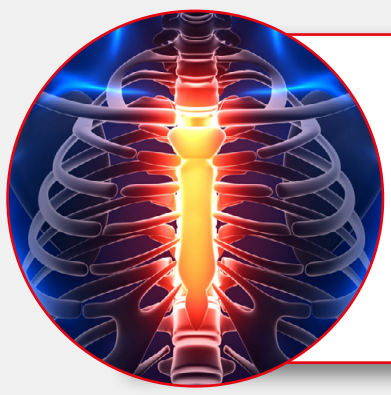
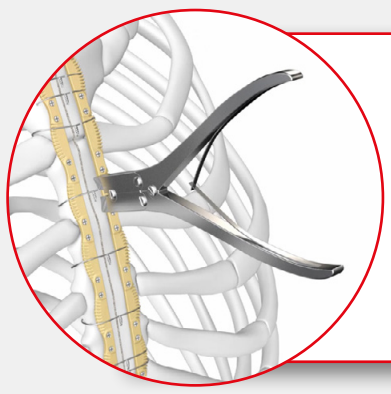


5.6x
fewer patients
with DSWIs[1]

3-Day
reduction in
length of stay[1]



2.1x
more patients healed
at 90 days post-op[1]



Zero Cost
re-entry

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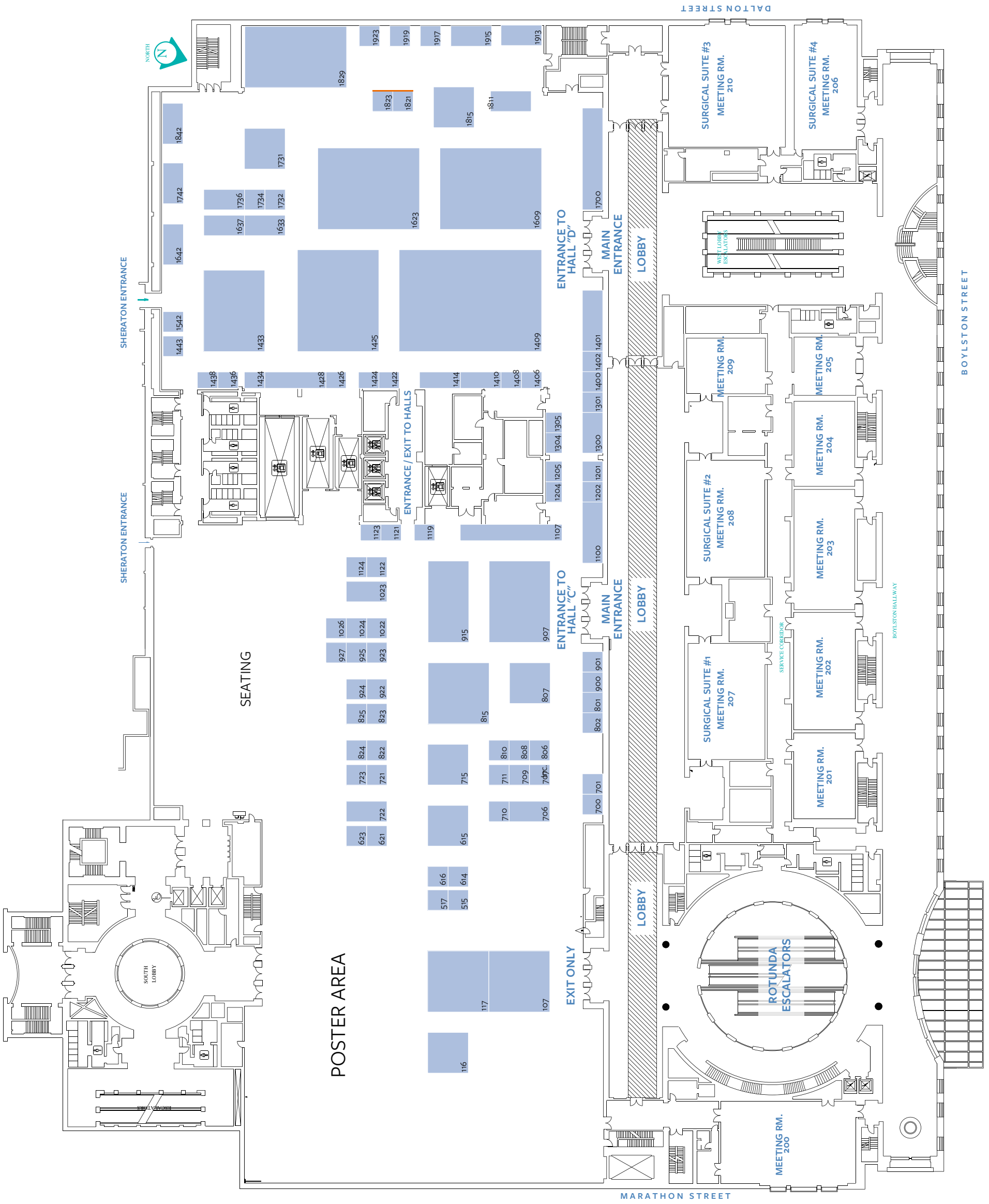
AATS 2022 Floor plan



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Arthrex, Inc 1734

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Baxter Healthcare Corporation 808

Baylis Medical 1122

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BD 1026

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A world leader in the field of in vitro diagnostics for more than 55 years, bioMérieux provides diagnostic solutions (systems, reagents, software) that determine the source of disease and contamination to improve patient health and ensure consumer safety. The company's products are mainly used for diagnosing infectious diseases. Fast and actionable diagnostics are essential in fighting significant issues like antibiotic resistance, acute kidney injury (AKI), food borne illness, and sepsis.

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The all-in-one, portable, compact system to optimize recovery from cardiothoracic surgery.

Congenital Heart Surgeons Society 517

CHSS: Congenital Heart Surgeons' Society. 49th Annual Meeting, October 23-24, 2022, Loews O'Hare, Chicago, Illinois. www.chss.org

Corcym Inc. 1731

CORCYM is a new, independent, global medical device company focused on the structural heart area. CORCYM offers a complete portfolio of surgical solutions with a heritage spanning more than 50 years. CORCYM employs approximately 850 people in more than 100 countries, ensuring a strong presence to continuously support Patients, Healthcare Professionals and healthcare systems worldwide.

CTSNet 1434

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

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CytoSorbents Corporation (NASDAQ: CTSO) is a leader in the treatment of life-threatening conditions in the ICU and cardiac surgery. The Company's flagship product, CytoSorb®, is approved in the E.U. for removal of cytokines, bilirubin, myoglobin and the antithrombotic agents ticagrelor and rivaroxaban. CytoSorbents is conducting clinical trials in the U.S. to support FDA marketing approval of DrugSorb™-ATR for ticagrelor, apixaban and rivaroxaban removal during urgent cardiothoracic surgery.

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Edwards Lifesciences 1609

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Essential Pharmaceuticals 901

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ESTS 1205

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Ethicon 801

Ethicon US LLC , a Johnson & Johnson company, commercializes 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, women's health conditions, hernias, cancer and obesity. Learn more at www.ethicon.com, or follow us on Twitter @Ethicon.

EziSurg Medical 1202

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Heart Valve Society (HVS) 1542

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HemoSonics, LLC 616

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ISMICS 1443

ISMICS: Innovation, Technologies, and Techniques in Cardiothoracic and Cardiovascular/Vascular Surgery. 2022 ISMICS Annual Scientific Meeting, 16-18 June 2022, Hilton Warsaw City, Warsaw, Poland; www.ismics.org.

JACE Medical 1305

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Japanese Organization for Medical Device Development (JOMDD) 711

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LeMaitre 709

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Pinnacle Biologics 1119

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R&D Surgical USA Inc / Xenosys USA 922

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Thoracic Surgery Oncology Group (TSOG) 1204

In conjunction with the Fiona and Stanley Druckenmiller Center for Lung Cancer Research at Memorial Sloan Kettering Cancer Center and the AATS, the Thoracic Surgery Oncology Group (TSOG) was formed in 2017. The overarching goal of the group is to improve the understanding of thoracic oncologic diseases and enhance patient care through the administration of multi-site trials focused on recent advances in precision medicine, immunotherapy, and intraoperative imaging.

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Wexler Surgical & TeDan Surgical Innovations 1107

Wexler Surgical manufactures and supplies specialty surgical instruments for cardiac, vascular, thoracic, and micro surgeries. Come by our booth to see the latest in innovative surgical instruments. TeDan Surgical Innovations (TSI) offers a wide variety of retractors and instruments for posterior, lateral and anterior spine, as well as cardiothoracic, neurological and orthopedic procedures.

Women in Thoracic Surgery 1438

The Mission of Women in Thoracic Surgery:
*To enhance the quality of medical care given to patients of the members
*To focus on the development of women thoracic surgeons through a mentoring program
*To enhance the education of patients concerning heart and lung disease, particularly but not exclusively, among women
*To enhance the education of women thoracic surgeons through seminars and other training mediums
*To create a supportive community to optimize the advancement of women in CT surgery

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Zimmer Biomet 1300

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AATS/WTS Joint Session: Coronary Masterclass Ballroom ABC *Monday 1:45 PM*

Surgical revascularization in women

In her presentation on Monday, Rashmi Yadav, consultant cardiac surgeon at The Royal Brompton Hospital, UK, will talk about the disturbing gender gap in cardiac surgery. As she told *AATS Daily News*, women are at a disadvantage at every stage of the care pathway.

At presentation, women patients tend to be older than men, have more comorbidities such as hypertension, hyperlipidemia, diabetes, heart failure, and atrial fibrillation. Women also have lower socio-economic status, worse physical and mental health and lower quality of life than men. There is also a racial disparity with women patients being more likely to be non-Caucasian.

Women patients are under-represented in clinical trials and also in basic science research with fewer female cell lines and animal research experiments.

Women are also less likely to be referred for diagnostic testing after initial presentation, less likely to be discharged with guideline-directed medical therapy after a heart attack, and also less likely to be referred for coronary revascularization than men, be it by percutaneous coronary intervention or coronary artery bypass grafting (CABG).[1]

The *Annals of Thoracic Surgery* study that she refers to found women have a 14–22% lower odds of undergoing guideline-recommended revascularization – including left internal mammary artery (LIMA) to left anterior descending artery grafting, multiple arterial grafting, and complete revascularization – compared to men.

The American researchers from Duke University who are behind the work studied the Society of Thoracic Surgeons (STS) Adult Cardiac Surgery Database – looking at outcomes between 2011 and 2019 for over a million patients. The gender gap was clear and persisted even after adjusting for baseline risk. "Why is this case? Why do women get fewer LIMA grafts? Why do women get fewer multiple arterial grafts?" questioned Ms. Yadav.

Her talk will look at some of the possible, multifactorial reasons, including higher baseline age and comorbidities at the time of surgery. This puts women at higher risk of complications during and after surgery, she noted.

Ms. Yadav added: "I operate on a lot of women, particularly women of Asian origin, where the problem of being small, female, and obese is even more exaggerated. Women are known to have smaller coronary arteries than men, even after adjustment for body habitus and age.

"My experience of several years of operating on women and ethnically diverse patients has shown me that not all LIMAs are made the same – there are differences. Some patients have more fragile and smaller diameter LIMAs. And those tend to be women," she says. One of the reasons quoted in the STS database for failing to use LIMA graft in women patients was the inadequate size and flow down the LIMA.

Ms. Yadav will share some histological slides of LIMA cross-section from different patients highlighting these differences. Because of these differences, there's a greater risk of the LIMA being damaged during the operation. "But a with a well thought through revascularization strategy, and meticulous attention to detail, women patients can have excellent outcomes and prognostic benefit from surgery."

The key, says Ms. Yadav, is appreciating the anatomic and physiologic differences and managing these differences to improve outcomes. "We need more women surgeons too: currently, less than 6% of attending/consultant cardiac surgeons are women."

She also stressed there is some evidence in other fields that concordance between patients and treating physicians – in other words, if the population that is being treated is equally represented in the population offering that treatment – improves outcomes. However, this has not yet been tested in coronary revascularization.

A Canadian study published in *JAMA Surgery* made newspaper headlines recently by suggesting that women patients have better survival after being operated by a female surgeon compared to a male surgeon. This difference was not noted when male patients were treated by either male or female surgeons.[2] It has since sparked many debates.

"With a well thought through revascularization strategy, and meticulous attention to detail, women patients can have excellent outcomes and prognostic benefit from surgery."

Rashmi Yadav

> "We need to recognize and mitigate the challenges of operating on women. More trials specifically directed at women are urgently needed. Specialist expertise in coronary surgery – particularly for women – is essential."
>
> **Rashmi Yadav**

Additionally, it has been shown that women patients are more likely than men to be adversely affected by perceived lack of warmth and empathy in the treating physician. Ms. Yadav says, from her experience, she finds she can build a rapport with her female patients, explore their fears and anxieties, and reassure them that heart surgery is a safe and good option.

To that end, she will share some real-life examples in her presentation. "I was able to reach them and allay their fears. It can make the difference between them saying no to surgery, in preference to a suboptimal percutaneous option or accepting CABG surgery which will improve symptoms and prognosis."

Ms. Yadav also noted that surgeons should carefully consider the treatment they are offering, and that "being female" should not be a bar to multiple arterial grafting (MAG), especially as research suggests MAG can be a good option for some. A recent study in *JAMA Cardiology* found although women tend to have a worse preoperative profile than men, MAG was associated with longer survival and lower incidence of a major adverse cardiac event among women at the lower end of the risk scale.[3]

Ms. Yadav concluded: "We need to recognize and mitigate the challenges of operating on women. More trials specifically directed at women are urgently needed. Specialist expertise in coronary surgery – particularly for women – is essential."

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1. Jawitz OK, Lawton JS, Thibault D, et al. Sex Differences in Coronary Artery Bypass Grafting Techniques: A STS Database Analysis. The Annals of Thoracic Surgery 2021 Jul; 16: S0003–4975(21)01250–9.
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Adult Cardiac Summit Ballroom ABC *Sunday 2:00 PM*

Time for a 'Ross renaissance'?

The popularity of the Ross procedure will be the subject of a keynote lecture by Vaughn Starnes, Chair of surgery at the University of Southern California (USC), and Chief of Cardiac Surgery at USC Norris Cancer and Keck Hospital of USC (CA, USA). Dr. Starnes has extensive experience of the Ross procedure, which consists of replacing the aortic valve with the patient's own pulmonary root (autograft) and replacing the pulmonary root with a pulmonary homograft. After a wave of enthusiasm in the 1990s, its use in North America declined to less than 1% of all aortic valve replacements (AVRs). "I've been practicing this operation for about 30 years," he told *AATS Daily News*. "I felt as if I had a commitment to it during its unpopular stages, so I continued to try to improve it."

Despite early adoption of the Ross procedure by many surgeons, Dr. Starnes noted that it fell out of favor for two reasons. "Firstly, they did it with a method that they were more familiar with – the root replacement technique – but that was unsupported," he explained. "Over months and years, the autograft would dilate and become insufficient, because it was a pulmonary valve placed in a high-pressure systemic circulation."

Secondly, the Ross procedure is a two-valve operation, which carries its own challenges: "You're taking out the pulmonary valve, putting it in an aortic position and then replacing the pulmonary valve with another valve," he added. "The complexity of the operation and some early failures led to its fall in popularity."

Returning to the original procedure, first described in 1967,[1] Dr. Starnes realized that Donald Ross' initial operations were placed inside the aorta, providing support. "We forgot about that basic premise, and had long been doing it without support," he said. "So, when it became unpopular, I looked for ways that I could simplify the operation and, importantly, support the autografts."

> "If we're to make the Ross procedure more accepted and practiced as a technique – and therefore benefit more patients – we have got to simplify it."
>
> **Vaughn Starnes**

To achieve this, Dr. Starnes took the autograft out and put it in a Dacron tube that would support it during the adaptive phase. "You need to give it time, but by encasing it in a Dacron tube, I gave it support, and reduced the autograft failure rate." Results have been impressive, noted Dr. Starnes, with failure rates at 10–15 years after the procedure dropping from 20% to 3%.

In contemporary practice, the Ross technique is now performed in both adults and children. For Dr. Starnes, he believes it is *the* operation of choice in pediatric cases. "It gives the child living tissue grafts that will grow with them (which we've demonstrated)," he said. "And also, it's a graft that doesn't require a child to be on a blood thinner."

The data for adults is very encouraging over recent years too.[2-3] Dr. Starnes noted that surgeons are seeing the survival rates for patients undergoing the Ross technique that parallel the general population. "We see that survival rate of the autograft is 20–25 years or more, but more importantly, so too is the survival rates of patients," he said.

It is a dramatically different picture with porcine and mechanical valve replacements, however. "At 10–15 years, you start seeing 5%, 8%, or even 10% mortality rates," he said. "So, for patients who are going to live 15, 20, or 25 years, to me that's an unacceptable hazard ratio."

Despite such encouraging results, the Ross procedure is not widely practiced, even today. "I would say there's probably six to seven centers in America now that have that kind of experience, and are really dedicated to it," explained Dr. Starnes. "They are just not going to serve the population of America who need this operation. We've got to expand that number."

And the need will be even more pressing in the future, he went on: "I think it's going to be more and more important as we see more patients coming in with bicuspid aortic valves in their 30s, 40s and 50s," said Dr. Starnes. Today, there's the transcatheter AVR option, but Dr. Starnes cautions it is not a good option for bicuspid aortic valves, because it has already been shown that they fail prematurely in such a population.

The reason for this is the ongoing complexity of the operation. "I would say there are very few surgeons in America that can do it successfully," he said. "I think if you asked the general cardiac surgery community to do that operation, it could be done without a high mortality. But I think the outcomes for valve function would be less than ideal."

Even in a more experienced surgeon population, complexity plays a crucial role. High-volume centers have published outstanding results with early mortality rates of less than 1%. However, a recent propensity-matched analysis from the Society of Thoracic Surgeons database revealed that low-volume centers had a three-fold higher operative mortality compared with conventional AVR (2.7% vs. 0.9%).[4]

Such complexity is clearly retarding its acceptance by the general cardiac community. "We've got to teach our residents do it, and for our current colleagues the emphasis should be on how to do it safely," stressed Dr. Starnes. "If we're to make the Ross procedure more accepted and practiced as a technique – and therefore benefit more patients – we have got to simplify it."

Dr. Starnes, who will talk through the

technique in detail, suggests a radical change in thinking. "We have to get around this idea that it is a two-valve operation," he reasoned, reiterating that autografts can last 25+ years, and a homograft or valve substitute used in the pulmonary position can be replaced more simply when required.

> "The Ross procedure is definitely the future. It's *the* valve substitute for young adults and children."
>
> **Vaughn Starnes**

"The next valve that is needed can be probably done in the catheterization lab with a transcatheter technique," he explained. "I think the quality of life after a Ross procedure, particularly for a young adult, is going to be greater than any other option we have today."

He concluded: "The Ross procedure is definitely the future. It's *the* valve substitute for young adults and children," concluded Dr. Starnes.

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2. Romeo JLR, Papageorgiou G, da Costa FFD, et al. Long-term Clinical and Echocardiographic Outcomes in Young and Middle-aged Adults Undergoing the Ross Procedure. JAMA Cardiol. 2021;6(5):539–548.
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Congenital Summit Room 210 *Monday 1:45 PM*

Staged ventricular septation in double-inlet ventricle: a strategy to avoid Fontan?

Monday afternoon's Congenital Summit will take a deep dive into important topics including William's Syndrome, complex forms of Transposition of the Great Arteries, the unrepaired hypoplastic proximal aortic arch, hypoplastic left heart syndrome, and Tetralogy of Fallot.

In her presentation, Anagha Prasanna (and in collaboration with colleague and mentor Sitaram Emani; Boston Children's Hospital, MA, USA) will explore the presentation, challenges, and treatment approaches for double-inlet ventricle.

Speaking to *AATS Daily News*, Dr. Prasanna outlined the work that she and Dr. Emani have been doing in developing new strategies to combat this complex congenital disease.

For those who may be less familiar with double-inlet ventricle, perhaps you could start by framing a snapshot of the condition?

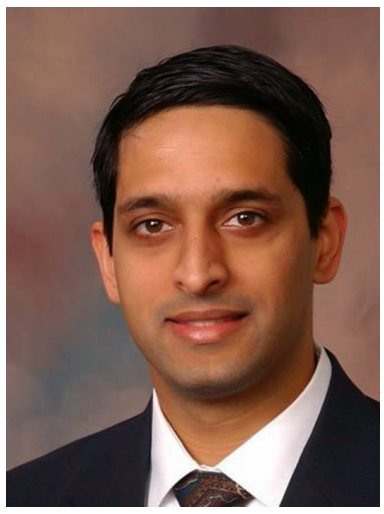
Double-inlet ventricle patients functionally have one ventricle receiving inflow from both atria, with atresia of the other ventricle. To be compatible with life, this anatomy requires balance of flows to the systemic and pulmonary circulations. Patients often present early in life with either hypoxia or heart failure, depending upon how this balance tips. Traditional management for this defect is life-long single-ventricle palliation, culminating in total cavopulmonary (Fontan) circulation.

Am I right in saying that despite improved mortality rates using the Fontan procedure, there is still significant morbidity, with several 'post-Fontan' issues? Is this particularly true in patients with certain genetic factors?

"We are excited to revisit the concept of ventricular septation, and hope that it helps many patients with double-inlet ventricles."

Anagha Prasanna

Anagha Prasanna



Sitaram Emani

As patients with Fontan circulation are getting older and surviving longer, we are seeing a spectrum of complications mostly associated with long-standing systemic venous hypertension and lymphatic dysfunction. These include arrhythmias, chronic liver disease, protein-losing enteropathy, renal failure, and plastic bronchitis. For patients with Fontan failure, cardiac transplant is the only durable option, but this carries its own risks.

While Fontan palliation is currently the standard of care for double-inlet ventricle patients, factors such as major genetic syndromes, significant atrioventricular valve regurgitation, pulmonary artery stenosis, lung disease, and reduced ventricular function place patients at increased risk for complications.

We propose that staged ventricular septation may be an appropriate alternative for patients with these risk factors.

Can you expand on what the staged approach entails, as well as its proposed aims, benefits, and outcomes?

Staged ventricular septation aims to promote gradual separation of the systemic and pulmonary circulations by recruiting a pumping ventricular chamber for each circuit. Stage 1 involves pulmonary artery banding or the Norwood procedure during the neonatal period, similar to what is traditionally performed for single-ventricle palliation. Stage 2, performed between six months and two years of age, involves partial ventricular and atrial septation to anchor a patch to the ventricular septum, and incompletely divide the single ventricle into two separate chambers

"If you encounter a patient with double-inlet ventricle, think about staged ventricular septation as an alternative to single-ventricle palliation – especially if the patient has risk factors for Fontan."

Anagha Prasanna

> "Staged ventricular septation aims to promote gradual separation of the systemic and pulmonary circulations by recruiting a pumping ventricular chamber for each circuit."
>
> **Anagha Prasanna**

– one for systemic-, and one for pulmonary circulation.

The fenestrated ventricular septal defect patch anchors ventricular muscle at multiple points, which theoretically stimulates interventricular muscle remodeling. Another goal of Stage 2 is to create favorable streaming of oxygenated blood to the body. Eventually the ventricle grows and remodels, while the patch stays the same size. The final procedure, performed at 3–5 years of age, seals all residual ventricular septal defects, and completes the separation of circulations.

This staged approach avoids some of the pitfalls of the single-stage ventricular septation, particularly ventricular diastolic dysfunction and heart block. We have developed a few new techniques to improve the outcomes, such as conduction mapping (which was presented during a plenary session on Saturday). Computational modeling and 3D visualizations have enhanced surgical planning. Additionally, improved imaging and surgical techniques for management of AV valves allow for complex reconstruction during ventricular septation.

What data are there on mortality, reintervention rates etc.?

At short-term follow-up, there have been no inter-stage deaths or cardiac transplants. All patients have been able to avoid Fontan and Fontan-associated complications so far. Although the short-term outcomes are encouraging, we need longer follow-up to compare to Fontan outcomes.

I've also seen your published work on one-and-one-half repair. How does the staged approach measure against this?

One-and-one-half ventricle repair is an alternative to Fontan in certain patients, and avoids many of the Fontan complications. Of the five patients in our cohort who have completed staged ventricular septation, three currently have one-and-one-half ventricle circulation. We believe that the circulation should be matched to patient characteristics, and we have a rudimentary algorithm for decision-making that I will touch upon during my presentation.

What's next for your research, and what would you like to see emphasized in the wider literature in this arena?

There are several outstanding questions regarding staged ventricular septation in double-inlet ventricle patients. Most important of all, we need to determine the long-term outcomes of this new strategy. Fontan patients do quite well for the first decade, so a long-term prospective study would be needed to compare Fontan outcomes to staged ventricular septation. A multicenter prospective study would be ideal, but a retrospective propensity matched study would be a good next step.

Additionally, we began using this strategy as an alternative for patients who are high risk for Fontan. However, since then we have extended the treatment patients without risk factors as well. Determining the most appropriate candidates for staged ventricular septation will be crucial. Optimal timing of the surgery is still a matter of discussion. We are excited to revisit the concept of ventricular septation, and hope that it helps many patients with double-inlet ventricles.

Any final words for the AATS audience?

If you encounter a patient with double-inlet ventricle, think about staged ventricular septation as an alternative to single-ventricle palliation – especially if the patient has risk factors for Fontan. Our institution's modifications to prior techniques limit the risk of historical complications, such as diastolic dysfunction, and complete heart block.

We hope that some of the information presented in the AATS Annual Meeting will be of benefit to your patients (or at least food for thought!)

Heart Transplantation Masterclass Room 309 *Sunday 4:15 PM*

Surge in overdose death donor cardiac allografts since pandemic

The COVID-19 pandemic has seen a 34% soar in the number of overdose death donors, representing 27.2% of all donors of cardiac allografts used in heart transplantation, a figure up from 20.5% pre-pandemic.

> "Overdose donors represent one third of all donors of allografts used in cardiac transplantation ... This has surpassed blunt injury for the first time in history."
>
> **Katherine Phillips**

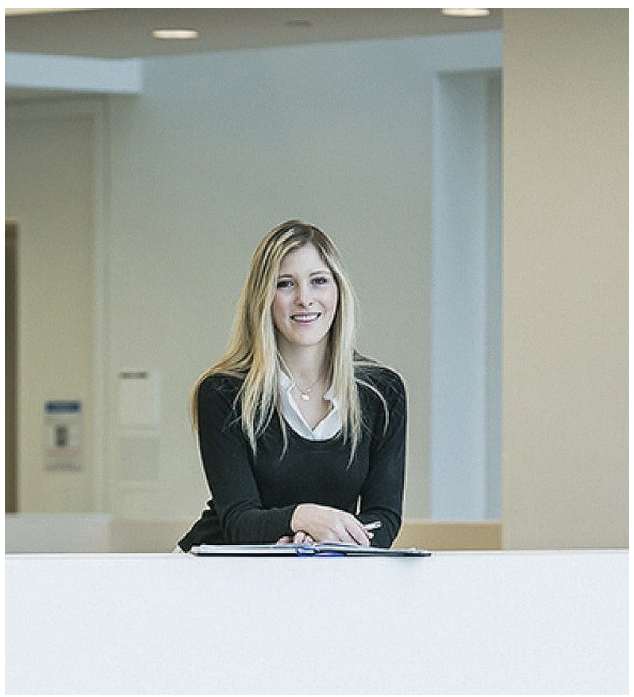
"Overdose donors represent one third of all donors of allografts used in cardiac transplantation," Katherine Phillips, first year resident in the integrated cardiothoracic surgery program at NYU Langone, New York, NY, USA, told *AATS Daily News* ahead of presenting findings of her study on the impact of COVID-19 on the opioid epidemic and its effects on cardiac transplant volumes later today.

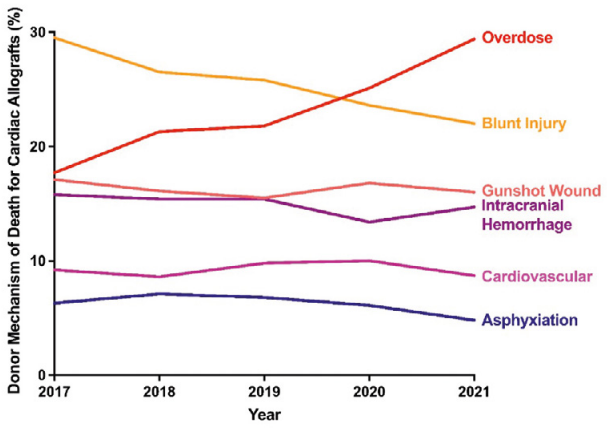
"This has surpassed blunt injury for the first time in history," she added.

Even before the pandemic, rates of overdose-death donors in the US increased due to the worsening opioid epidemic. But over the pandemic, rates of overdose deaths soared to previously unseen levels, claiming 92,000 deaths in 2020, a jump of 21,000 over the previous year. Possible reasons include the riskier conditions associated with social isolation, as well as general socio-economic downturn and a more lethal drug supply.

Dr. Phillips' abstract notes that over half of all donors from Delaware, Connecticut and Washington DC were overdose deaths. Her pandemic period was defined as March 2020 to June 2021. These locations also had correspondingly high rates of unemployment and homelessness during the pandemic, with synthetic opioids such as fentanyl demonstrate the highest overall rate of overdose deaths, she notes.

However, despite the tragedy, "For the first time in transplant history, overdose death donors are the most prevalent organ donor with 1 in 3 organ donors, surpassing blunt injury," remarked Dr. Phillips.





"Overdose donors have several favorable characteristics such as being significantly younger, less likely to require inotropic support, and allografts from overdose donors tend to have shorter average ischemic time," she said.

However, she added that there were several risk factors associated with overdose donors such as higher rates of obesity, higher rates of illicit drug use/cocaine use/smoking, and four times higher rates of hepatitis C. "However, hepatitis C antibody positivity was still only seen in a minority of overdose death donors at 26.8%."

Regarding hepatitis C, she pointed out that with the availability of novel direct-acting anti-retrovirals, it was now possible to safely accept donors who have hepatitis C infection in hepatitis-naive recipients.

When asked whether she thought the discard criteria around overdose death organs were too stringent, Dr. Phillips explained that they examined characteristics of discarded cardiac allografts where other organs from the same donor had been used for transplantation and found that, "cardiac allografts were younger, however they were more frequently hepatitis C-positive, had lower ejection fraction, and were more likely to be ruled out in the operating room (4.3% of the time vs. 1.5% of the time).

"This, combined with similar overall survival rates in the allografts that are transplanted, suggests that current selection considerations when choosing these organs is likely appropriate."

> "Overdose donors have several favorable characteristics such as being significantly younger, less likely to require inotropic support, and allografts from overdose donors tend to have shorter average ischemic time."
>
> **Katherine Phillips**

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