



AmSECTOMORROW

Why Attending the AmSECT Conference Matters from a Student Perspective

BY: LANETTE CHOI, RUSH

Attending the AmSECT conference as a perfusion student is more than just an academic experience; there are many opportunities to grow professionally and connect with the broader perfusion community. Whether you're a first-year or second-year, the benefits are substantial and uniquely valuable at each stage to a perfusion student.

Here's What I Learned

One of the most impactful aspects of the conference was exposure to a wide range of presentations. There were multiple sessions covering adult, pediatric, adult congenital, debates, among other topics related to perfusion.

These sessions were led by:

- Students, who shared their research, data, clinical applications, and future directions for their project they conducted during school
- Perfusion clinicians from around the world, who discussed case studies, new techniques, new technology, research, and challenges in their practice
- Industry and manufacturers, who introduced their latest models and innovations which will shape the perfusion field
- Other health professionals, who highlighted the broader implications of perfusion in population health, healthcare systems, or in specific specialties

Why Should You Attend?

For many students, AmSECT serves as their first international conference. For first-year students, the conference serves as an introduction to the perfusion world outside of the classroom. The sessions and conversations at the conference can help apply what you're learning in the classroom to clinical and research settings. Second-year students are preparing to transition into the workforce, and the conference can offer insight into different hospital practices and job opportunities.

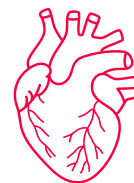
Across both years:

- There are student sessions where all first- and second-year students can get information about the boards, certification and licensure, and how to be more involved in AmSECT as a student and as a CCP. There are also times and events where the students can mingle with each other and get to interact with other students from other schools.
- Interacting with clinical perfusionists from around the US and the world provides perspective on how practices and cultures vary between institutions. These connections can be invaluable when exploring job opportunities whether with contract groups or hospital-based positions.

Student-Focused Opportunities:

- Different avenues for participation, such as:
 - Poster presentations
 - Oral presentations
 - Volunteering
 - Attending as an engaged participant
 - Competing in the Perfusion Bowl

Not only do these opportunities enhance your learning, but they also give you the chance to contribute to the field of perfusion. Attending the AmSECT conference as a student is an investment for yourself as a future perfusionist. It links the educational and clinical stages of our career, and introduces you to people and ideas shaping the field. Lastly, the student environment at the conference is extremely welcoming, so whether you're representing your school alone or coming with your entire class, the experience will be amazing either way and is truly one that every perfusion student should take advantage of.



UNDERSTANDING VENTRICULAR ASSIST DEVICES: STUDENT OVERVIEW

BY: ISABELLE TEASEL, NKU (EDITOR IN CHIEF)

Heart Failure

Heart failure is the clinical syndrome that results from functional or structural cardiac disorders that impairs the ventricle's ability to fill or eject blood. More than 5 million Americans suffer from heart failure, which makes it the leading cause of death in the western world. Approximately, there are 50,000 deaths and 670,000 new cases per a year. About 250,000 patients have the most advanced stage of heart failure. New York Heart Association [NYHA] is used to categorize and quantify the degree of function limitations caused by heart failure.

Both left and right heart failure can develop. Non-ischemic cardiomyopathy is the most common pretransplant diagnosis worldwide. The ventricular function decreases due to the reduction of cardiac output and stroke volume. The compensatory adrenergic, salt, and water retention pathways become activated. The patient's heart rate will increase. The left ventricle will remodel: dilation or hypertrophy. Dilation will occur due to overexpression of molecular mediators which leads to decreased ejection fraction and cardiac output. Hypertrophy will result from lack of filling which leads to decreased stroke volume.

As heart failure progresses, the stroke volume cannot keep up with the increased preload and the increased afterload is poorly tolerated. The patient will exhibit additional symptoms such as fluid retention, dyspnea, fatigue, decrease organ function of the liver and kidneys due to the decreased cardiac output and elevated venous pressure. Medical management includes diuretics, inotropes, RAAS system inhibitors, vasodilators, and anticoagulants. Cardiac implantable electronic devices [CIED] can also be used such as ECMO, IABP, IV medications, mechanical ventilation, and ventricular assist devices [VAD].

Ventricular Assist Device

VADs is a mechanical pump that is surgically implanted or attached to one of the heart's ventricles to augment or replace the native function. There are 3 types of VAD: LVAD, RVAD, and BiVAD. The LVAD is a single system device that

connects the left ventricle to the aorta for left ventricular support. The RVAD is connected to the right atrium to the pulmonary artery. The BiVAD mechanically assists both ventricles. Each VAD is powered by an external source that connects to the implanted pump through percutaneous lead that exits the body from the right abdomen.

Why VAD?

Heart disease is the leading cause of death in the western world. Thousands of patients are waiting on the transplant list, while approximately 4,000 patients received a transplant last year. About 15% of heart transplant patients die while waiting. VADs are indicated as a bridge to transplant, bridge to recovery, destination therapy, and bridge to candidacy or decision. About 2,000 VADs were implanted last year alone.

Pulsatile Versus Non-pulsatile

Pulsatile VADs were the first generation devices that have been used since the 1980s. An electric motor or pneumatic air pressure collapses the chamber and forces blood into systemic circulation through the outflow cannula. Patients will have a palpable pulse and measurable blood pressure due to the VAD output flow. Important parameters include pump rate and output.

On the other hand, non-pulsatile or continuous flow devices use impeller or axial flow mechanics. Patients will have weaker, non-palpable pulses along with a narrow pulse pressure. The important parameters include flow, speed, power, and pulsatility index.

VAD Management & Complications

All VADs are EKG and preload dependent, afterload sensitive, and anticoagulated. These devices are prone to driveline infections, which is the most common postoperative complication. Other risks are further infections, bleeding, thrombosis, stroke, and mechanical malfunction. Complications also include arrhythmia, hypertension, hypotension, loss of preload, depression, sucking down, device failure, and hemolysis.

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The Starnes Procedure: A Strategy for Neonates with Severe Ebstein's Anomaly

BY: CHANDRA DUDLEY, USC

Ebstein's anomaly (EA) is a rare defect of the tricuspid valve (TV). Failure of tricuspid leaflet delamination results in an apically displaced TV, an enlarged right atrium, and a partially atrialized right ventricle with limited function. Pulmonary atresia, PDA or ASD may also be present. The severity of EA is highly variable – some patients are asymptomatic until adulthood, while others are critically ill as neonates. Milder cases may be managed with an SP shunt, ductal stent, or ductal closure. However, the presence of massive cardiomegaly, severe tricuspid regurgitation or pulmonary atresia often requires more intervention. Historically, these patients faced high mortality without surgery, but early attempts at TV repair or replacement in neonates had poor results.

The Starnes procedure was developed by Dr. Vaughn Starnes at Stanford in the late 1980s and subsequently refined at Children's Hospital of Los Angeles (CHLA). While each operation varies with patient anatomy, several key steps are consistent. After opening the right atrium, a fenestrated patch is placed over the TV annulus. An atrial septectomy is performed to allow mixing, and the enlarged RA is reduced. If the pulmonary valve is insufficient, the main pulmonary artery is ligated to prevent retrograde flow into the excluded RV. The ductus is ligated and a modified BT shunt is placed.

Perfusion strategy varies by patient, surgeon, and institution. Cannulation is generally aortic and bicaval, and a period of cross-clamp and arrest should be anticipated. While moderate hypothermia is common, DHCA is often employed at CHLA for improved visualization. If a PDA is present at bypass initiation, the perfusionist should be aware of shunt steal prior to ligation.

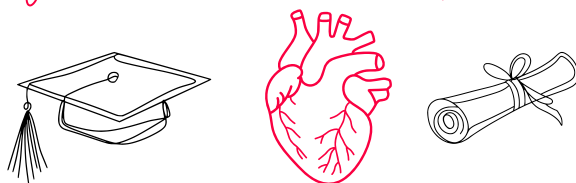
The Starnes procedure results in RV decompression and remodeling, reducing cardiomegaly, preventing septal shift, and supporting improved LV function. While it was developed as a single ventricle palliation step followed by Glenn and Fontan procedures, recent studies have shown potential for conversion to 1.5 or 2-ventricle physiology through interventions such as the cone procedure.

Recent efforts to perform complete tricuspid repair with preserved biventricular circulation on neonates have had inconsistent results. The rarity and variability of EA makes it difficult to cultivate the high level of skill required for such a repair. Proponents of the Starnes procedure argue that it is simpler, broadly applicable across anatomic variations, and conducive to improvement of ventricular function, making it a safe and reliable primary strategy with multiple pathways for future repairs.

Did you know?

The early bubble oxygenators, Rygg-Kyvsgaard, utilized a bubbling and settling chamber along with a reservoir in the same “bag”.

Congratulations all second-year students!! Have a wonderful graduation and a successful career.



CASE STUDY: Heart Transplant in the Setting of Non-Ischemic Cardiomyopathy

BY: Danielle Hanmer, Emory University

Nonischemic cardiomyopathy (NICM) is characterized by structural and functional ventricular abnormalities in the absence of obstructive coronary artery disease. Emerging evidence suggests that early NICM is not a benign entity, as myocardial fibrosis and progressive ventricular dysfunction may develop early in the disease course, conferring significant long-term risk even in young patients. Presenting the case of a 29-year-old male with a known pathogenic TTN gene mutation who initially presented to the emergency department with progressive dyspnea on exertion and mild fatigue. He was treated symptomatically and discharged; however, over the ensuing months, he experienced multiple recurrent presentations with worsening heart failure symptoms. Further evaluation revealed a significantly reduced left ventricular ejection fraction, consistent with advanced NICM. Given his rapid clinical deterioration despite guideline-directed medical therapy, he was listed for orthotopic heart transplantation.

The donor heart was transported using an XVIVO ex-situ heart perfusion system, allowing for continuous normothermic preservation as the donor heart traveled from over 1,500 miles away. The diseased heart was dissected and removed, without the use of cardioplegia. The patient was successfully placed on cardiopulmonary bypass, though intraoperative hemodynamics were notable for labile blood pressures. The donor heart was implanted without technical complication, and the patient was weaned from cardiopulmonary bypass uneventfully, demonstrating immediate graft function.

Nonischemic cardiomyopathy (NICM) most commonly develops secondary to chronic conditions such as long-standing hypertension, which leads to progressive ventricular remodeling and dysfunction over time. While genetic etiologies are increasingly recognized, they account for a smaller proportion of NICM cases compared to acquired causes. NICM is distinguished from ischemic cardiomyopathy by the absence of obstructive coronary artery disease, with myocardial dysfunction occurring independently of ischemic injury.

Among genetic causes, mutations in the TTN gene are well established and are most frequently associated with dilated cardiomyopathy, characterized by ventricular chamber enlargement and systolic dysfunction. Interestingly, this patient demonstrated a pathogenic TTN mutation without the classic phenotypic features of dilated cardiomyopathy, highlighting this atypical presentation.

BOARDS IN BLOCKS: What the 2026 Format Change Means for Test Takers

By: Hannah Calcote, RUSH

Boards. The word alone can raise a pulse. One of the most daunting—yet rewarding—milestones in becoming a Certified Clinical Perfusionist is changing. Beginning Fall 2026, the American Board of Cardiovascular Perfusion (ABCP) will transition both the PBSE and CAPE to a block-style format. While change can feel nerve wracking, block testing is hardly new. Medical students taking the USMLE, physician assistants sitting for the PANCE, and nurses completing the NCLEX have long navigated exams delivered in block sections.

What Is a Block-Style Exam?

A block-style exam is divided into timed sections containing a set number of questions. Once a block is submitted, you cannot refer or alter the containing questions. The major shift will be: No more circling back. Strategy must prioritize confident decision-making in real time rather than relying on review of previous questions.

Will Curriculum Change?

In conversation with Allison Weinberg, Professor in the Cardiovascular Perfusion Program at Rush University, she noted that the content itself is unlikely to change. What may evolve is delivery.



Comprehensive exams given during the semester will likely mirror block timing to simulate real board conditions.

Change in Study habits?

Block-style testing is not uncharted territory. After speaking with professional students accustomed to block exams, a few consistent themes emerged: Board preparation begins on day one. Focus should be on conceptual understanding rather than memorization; this allows you the ability to reason through unfamiliar questions. Some study habits that can help with conceptual learning are following active recall rather than passive learning styles.

These are exams that require stamina and endurance. Practicing in timed blocks, strategizing breaks, pacing and even snacks can help prepare for exam day. Low glycemic snacks like nuts, are recommended over high glycemic snacks, which can cause sugar spikes that decrease cognitive function.

Bigger Picture:

Remember: how you practice is how you perform. The format may be changing, but your preparation can stay grounded in the same fundamentals that have always produced strong perfusionists—discipline, repetition, resilience, and understanding.

You've got this.



AmSECT 2026



THE RESERVOIR

AmSECT Membership:

Student Memberships are free! Register now and become an official part of the perfusion community.

Go to: <https://www.amsect.org/Members/Student-Corner>

Have a perfusion goof & blunder? Please email Teaselil@mymail.nku.edu to have yours featured in the next issue!

STRESS CAN BE YOUR FRIEND: How to Manage Stress With Finals

BY: Graham Downing, Lipscomb



Finals week (or weeks) is a phenomenon that every student has experienced. The culmination of a didactic semester that typically entails multiple tests, projects, and presentations with no shortage of stress. Sadly, knowing what's coming doesn't necessarily make it any easier. Before you begin to panic, note that there are literally thousands of tested and researched methods to promote successful studying and time management. Here are just a few of my personal favorites that have let me feel more prepared and relaxed throughout finals.

The Pomodoro Technique

Created by Francisco Cirillo in the 1980's, this method uses a series of 25-minute high-focus periods, followed by a short 5-minute break. After four standard sessions, a longer 25-30-minute break is suggested to promote material absorption and prevent mental fatigue. This method has been shown to increase both productivity and retention, plus it forces you to take a break, which we all need every now and then during finals.

Write it out

If you are like me and some things just don't stick, no matter how many times you read them, revert to the basics. Writing out notes, rewriting notes, or just rewriting something you don't feel you are retaining can massively improve the material's retention rate. Written notes have been shown to double retention rates compared to active listening or reading alone. This method is most effective with handwritten notes and forces active processing, requiring you to restructure the information into something more digestible and therefore more memorable, come test time.

Be social

Group work and studying once you have a baseline can be the most beneficial method to solidify your knowledge and identify potential weak points. Everyone in the class has different strengths and weaknesses, so working together and quizzing each other can fill in anything that you may have missed on your own. This also has the added benefit of stress management; we didn't get where we are alone, and there is no point in suffering through finals solo. A social hour here and there makes all the difference in bringing down those cortisol levels and keeping the stress manageable. Find a place, like a conference room with comfy chairs, some natural light, and put in some hours with your classmates. I can almost guarantee you'll learn something and even feel better by the end. After all, misery loves company.

Finals and the stress they bring will happen no matter how much you try to avoid them. Preparing, using techniques that work for you, and taking breaks here and there might just make the workload manageable. If you work with a group, you may even find that you're having some fun!



See you at AmSECT 2027!!

Before You Go!

The AmSECT Student Council exists to promote student involvement within AmSECT. While our current members hail from over 19 different programs, our goal is to have every perfusion program in the country represented on the council. Our major projects include an annual fundraising event, the perfusion bowl, and this very newsletter, with multiple opportunities for student leadership!

Our current officer team consists of a president/chief student liaison, vice president, fundraising project lead, communications coordinator, and newsletter editor, pre-perfusion coordinator, events, and perfusion bowl coordinator. The Student Council meets monthly via Zoom for one hour, so the time commitment is designed to be manageable! Don't forget to sign up to come to the annual AmSECT Conference in the spring! It's a great way to network and see the student council in action.

INTERESTED IN JOINING THE STUDENT COUNCIL?

PLEASE EMAIL AMSECTSTUDENTHQ@GMAIL.COM AND BE SURE TO INCLUDE YOUR CONTACT INFORMATION. SHARE YOUR VOICE, DEVELOP YOUR NETWORKING AND LEADERSHIP SKILLS, AND BECOME INVESTED IN THE PROFESSIONAL DEVELOPMENT OF OUR FIELD! WE LOOK FORWARD TO SEEING YOU JOIN OUR TEAM.

See you next year!

