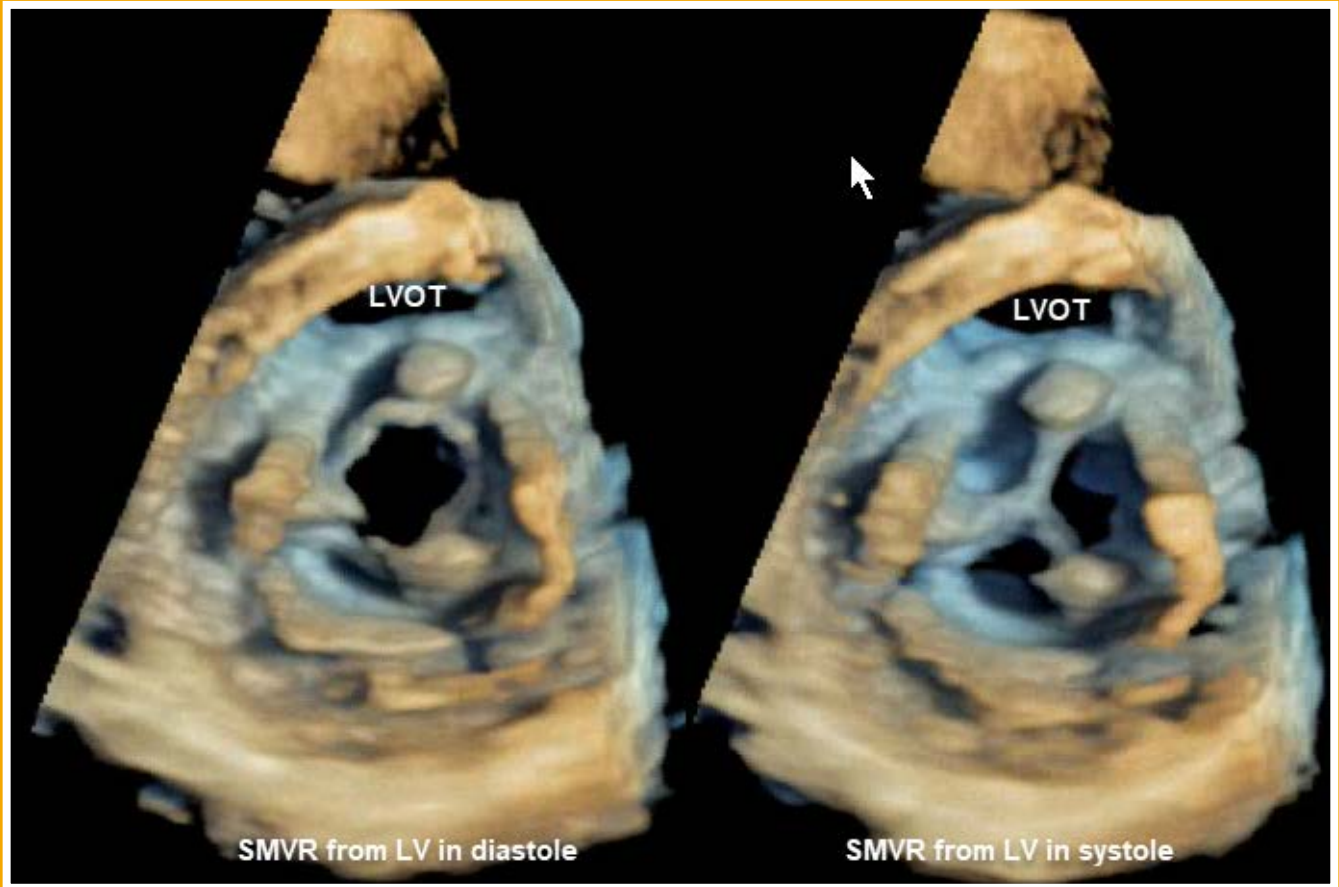


ECHO



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Let's make the Next
50 Stronger Together**

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2024/2025 EDUCATION CALENDAR

SEPTEMBER 2024

4th Annual Advanced Imaging Techniques for Sonographers

September 7-8, 2024
Virtual Experience

Jointly provided by ASE and the ASE Foundation

OCTOBER 2024

12th Annual Echo Florida

October 12-14, 2024
Disney's Grand Floridian
Resort & Spa
Orlando, FL

Jointly provided by ASE and the ASE Foundation

3rd Annual Echo in Pediatric & Congenital Heart Disease

October 26-27, 2024
Virtual Experience

Jointly provided by ASE and the ASE Foundation

NOVEMBER 2024

Critical Care Echocardiography Review Course

November 14-16, 2023
OLC Education & Conference
Center, Rosemont, IL

Held in Partnership with SCCM and ASE

Discounted rates for ASE members. To learn more and register, visit us at ASEcho.org/Education.

This text also appears in the July/August JASE.
OnlineJASE.com

JANUARY 2025

34th Annual Echo Hawaii

January 20-24, 2025
Fairmont Orchid, Kohala Coast,
Big Island, HI

Jointly provided by ASE and the ASE Foundation

FEBRUARY 2025

37th Annual State-of-the-Art Echocardiography

February 14-17, 2025
Westin Kierland Resort & Spa,
Scottsdale, AZ

Jointly provided by ASE and the ASE Foundation

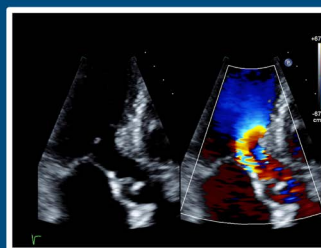
SEPTEMBER 2025

36th Annual Scientific Sessions

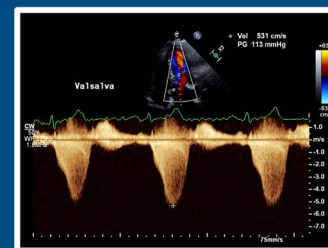
September 5-7, 2025
Music City Center (Downtown)
Nashville, TN

Jointly provided by ASE and the ASE Foundation

ASH & SAM of the MV
= Dynamic LVOTO



Dynamic LVOTO gradient
with Valsalva



"Dynamic Duo" Bonita Anderson DMU(Cardiac),
MAppSc(MedUS), AMS, ACS, FASA, FASE, The Prince
Charles Hospital, Brisbane, Brisbane, Australia

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Cover art: "Normal Surgical Bioprosthetic Mitral Valve 3D TTE" Alicia Rangosch, ACS, RCCS, RDCS, RVT, Houston Methodist Hospital Adult Congenital Heart Program Houston, Texas

EDITORS' NOTE

ASE is very grateful to our members who contribute to *Echo* magazine and values their willingness to share personal insights and experiences with the ASE community, even if they may not be in total alignment with ASE's viewpoint.

BUILDING TOMORROW: LET'S MAKE THE NEXT 50 STRONGER TOGETHER

Contributed by **Theodore P. Abraham, MD, FASE**, Meyer Friedman Distinguished Professor of Medicine and Director of Echocardiography at the University of California San Francisco, San Francisco, CA

“

My vision hopes to nurture our **plurality**, engender **progress** in science and technology to build value-care, and **promote** innovation.”

I am honored and delighted to be assuming the Presidency of the American Society of Echocardiography (ASE). I am passionate about the ASE, proud of its history, and appreciative of its role in my career. They say it takes a village but my journey to this position has taken a village, some towns, and a few cities but mostly facilitated and sponsored by ASE mentors and peer well-wishers who have empowered and supported me throughout my career. My goal is to use my skills, and our collective and diverse strengths to enhance its position, amplify its role as the global leader in the practice, education, and research of cardiovascular ultrasound, and contribute significantly to making it a larger, stronger, and greater organization tomorrow than it is today. As we near our 50th anniversary, this may be a good time to ask ourselves the following questions: 1. Who are we? What is our identity and the current climate change? 2. What do we do? How do we provide value to our patients, our members, and our wider community? 3. How do we secure our future? How do we continue to provide value to our members and re-imagine the ASE of the next several decades? I have some ideas and would like to tap into the immense community wisdom at the ASE to sculpt a better future for all of us.

My vision hopes to nurture our **plurality**, engender **progress** in science and technology to build value-care, and **promote** innovation. *The*

Building Tomorrow vision (**Figure 1**) would be about rapidly adapting the ASE strategy to better respond to the changing environment to preserve its preeminent role and expand its influence as a global society. The vision

(Figure 2) would be translated in 3 initiatives:

1. Awaken our Creativity (ASE Creates): We will be a Society of Innovation and Invention by providing a nidus for brainstorming and execution for technological advances in cardiovascular ultrasound. To this effect, we will do the following:

A. Convene a Workgroup focused on Innovation Acceleration. The goal is for ASE to be front and center on all aspects of innovation. We have expertise across the entire spectrum from ideation to implementation. However, we have generally sat on the sidelines with individual members contributing immensely to the success of particular companies. Furthermore, instead of passively reacting to technology brought to our attention, ASE members can contribute user-generated ideas that would improve the quality and practice of cardiovascular ultrasound.

B. Create a mechanism for ASE to support early-stage start-up companies. New companies often do not have the funding to join the industry round table (IRT). Thanks to ASE leaders, we have a plan to leverage equity in such early-stage companies. This will set the stage for a symbiotic relationship between companies that need our expertise as they accelerate their innovation, and we are vested in their success.

C. Develop a series of Key Opinion Leader (KOL) panels. We will convene a series of panels with expertise in specific self-specialties. This resource will offer individual and group expertise to both early-stage and late-stage companies. Further, we will establish a community of beta users who will be involved in evaluation, iterative product development and publish on emerging technologies.

D. Embed ASE in Regulatory processes. The Federal Drug Administration (FDA) has constituted a program termed the Total Product Lifecycle Advisory Program (TAP). The ASE is now a signatory to this program and will be involved early in the FDA discussions as the product is being developed and processed for FDA approval/clearance.

e. Launch an Accelerator event. We will constitute an ASE Accelerator taskforce and host a shark tank-style



FIGURE 1

event, which will match emerging companies with potential investors (e.g. venture capital firms) and provide a platform for fertilization of new product development programs.

2. Secure our Future (ASE Secures). ASE has grown over the last 50 years to emerge as a highly regarded professional organization, and is in fact, the largest cardiac subspecialty organization in the world with over 17,000 members in 112 countries. While we have grown in the complexity of technology and range of services, we are faced with technologies such as Artificial Intelligence (AI) that present opportunities for workflow improvements and enhanced diagnostics

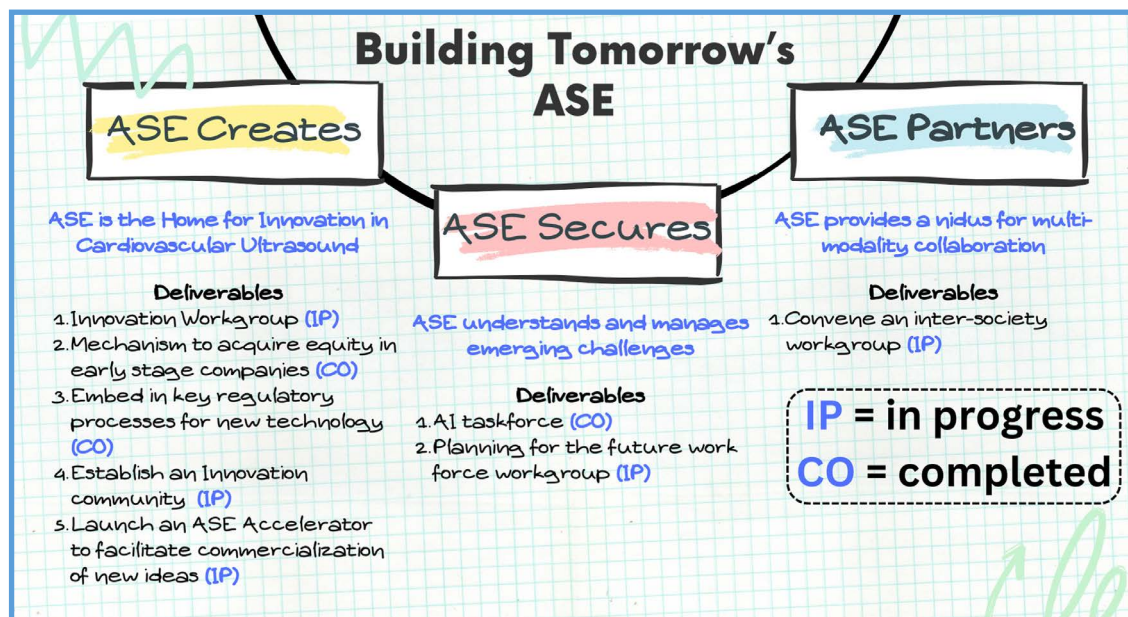


FIGURE 2

and prognostics but come with the uncertainty of pressures on the economics of ultrasound and impact on our workforce. All these topics have a disproportionate impact on sonographers who form a large, critical, and unique attribute of our membership. A workgroup will be convened to understand how ASE can construct a forward-looking strategy that addresses education/training, workforce planning and economics with a focus on sonographer-related impact.

3. Engineer Collaboration (ASE Partners). Medicine does not exist in a silo, and clinical decisions use multiple lines of data to arrive at a diagnosis, determine therapy, monitor response, and inform prognostics. We will organize an inter-societal workgroup that collaborates with other imaging societies to develop cooperative programs for training, credentialing standards, research, and clinical excellence.

The sum of the successful execution of these three initiatives creates value and a sense of well-being among our members. My guiding principles would be member engagement and participation (allow all voices to be heard), and to implement a diverse, inclusive, and forward-looking vision, executed with the highest level of integrity.

As astutely pointed out by ASE Past President, Dr. Bill Zoghbi, ASE is a Society with a Soul™, thanks

to its dedicated staff, outstanding executive leaders, and engaged members. It is my honor to serve the Society, and I will use my year as President to advocate ASE's mission passionately and unambiguously.

This article has been adapted from the July/August JASE article [OnlineJASE.com](https://www.onlinejase.com)

Theodore P. Abraham,
MD, FASE
ASE President



THE STATE OF CARDIAC SONOGRAPHY-A FIFTY-YEAR UNIQUE PARTNERSHIP

Contributed by David Adams, ACS, RCS, RDCS, FASE, Merri L. Bremer, EdD, RN, ACS, RDCS, FASE, AACCC, Ken Horton, ACS, FASE, Peg Knoll, RDCS, RCS, FASE, and Jane E. Marshall, BS, RDCS, FASE

A

SE president Dr. Ted Abraham has asked us (*Figure I*) to summarize the current involvement of sonographers in our organization including our concerns and hopes for the future, as one of his goals is to further expand the role of sonographers in ASE. Limited space here precludes us including all the ASE sonographer history; please refer to the references for a more complete review.¹⁻³

HISTORY

2025 marks the 50th year of the ASE. One of the unique characteristics of ASE is the acknowledgement of the clinical partnership between sonographers and physicians. From the beginning Dr. Harvey Feigenbaum, our founder and first President, understood the importance of cardiac sonographers. In the mid-60s Dr. Feigenbaum trained the first cardiac sonographer, Charles Haine.⁴ From ASE's inception, sonographers have been an integral part of ASE and to our knowledge, ASE was the first professional organization led by physicians that included a significant percentage (30-40%) of non-physicians. Sonia Chang, another sonographer from Dr. Feigenbaum's echo lab, was on the first ASE Board of Directors (1975-1976). She was included as an author on multiple publications, which was unheard of at the time. She also wrote the first textbook written by a sonographer, which addressed teaching echocardiographic technique and pattern recognition and was widely read by fellows in training and sonographers.^{5,6}

“

One of the unique characteristics of ASE is the acknowledgement of the clinical partnership between sonographers and physicians.”



CURRENT STATUS WITHIN ASE

Since the first ASE Scientific Sessions in 1990, sonographers have been invited to participate as faculty on all Scientific Sessions, smaller educational meetings held around the country and many international meetings. This is appropriate, as sonographers are an integral part of the education and teaching of fellows, junior staff in training, residents, and medical students. Sonographers are members and leaders on most ASE committees, task forces, and writing groups, including many guideline documents. In 1993 the Cardiac Sonography Council was formed to address issues of importance to sonographers. Participation in the council is often a pathway to being a member of the ASE Board of Directors. A sonographer is always elected to the Executive Committee as Secretary and recently, a sonographer served as ASE Treasurer. Sonographers are also eligible to apply to become Fellows in the American Society of Echocardiography (FASE).

Technological advances in diagnostic imaging techniques and therapeutic interventions have led to an expanded sonographer role. In many hospitals sonographers play a vital role on the structural heart team, in the operating room, the cath lab and electrophysiology suites. These advanced imaging techniques and roles served as the catalyst for the inception of the Advanced Cardiac Sonographer (ACS) role and

FIGURE 1

Authors and Avid ASE Supporters David Adams, ACS, RCS, RDCS, FASE, Merri L. Bremer, EdD, RN, ACS, RDCS, FASE, AACCC, Jane E. Marshall, BS, RDCS, FASE, Peg Knoll, RDCS, RCS, FASE, and Ken Horton, ACS, FASE at the ASE Foundation's 15th Annual Research Awards Crystal Gala on June 15, 2024. Photo provided courtesy of Scott Koon.

credential. ASE endorsed this designation in April 2009, publishing a JASE paper outlining the criteria, and later started the Committee on Accreditation for Advanced Cardiovascular Sonography (CoA-ACS) to expand training opportunities for advancement of sonographers. Additional duties of the ACS include teaching, mentoring and research.⁷

ASE is supportive of advancing professional recognition and advancement globally through the American Registry for Diagnostic Medical Sonography, Cardiovascular Credentialing International, Commission on Accreditation of Allied Health Education Programs, Society of Diagnostic Medical Sonography, Society for Vascular Ultrasound and many international societies. In fact, ASE financially supports and has official representatives on JRC-DMS, JRC-CYT and CAAHEP. Our sonographers hold credentials through ARDMS, CCI, and credentialing bodies around the globe. Our Scope of Practice is periodically updated



The reason our ASE cardiologist/sonographer partnership has survived for so long is that we are and will always be the pathway for providing diagnostic images and data to the cardiologist.”

with these organizations with the support of ASE. Legal and regulatory issues such as expanding sonographer licensure, intravenous line placement and ultrasound enhancement agent injections are addressed by the ASE Advocacy Committee.

CHALLENGES AND THE FUTURE

Despite the gains sonographers have achieved over time, challenges still exist.

- Performing studies that require longer duration (e.g. valvular, complex pathophysiology, patient body habitus, etc.) with increasing time constraints has led to problems; performing studies with inadequate time produces stress. Multiple surveys over the past 20 years have shown that 80-90% of sonographers scan in pain. Work-Related Musculo-Skeletal Disorders (WRMSDs) have forced sonographers to lose work time due to injury or even to change careers.^{8,9} ASE joined other organizations in the "Grand Challenge" to try to mitigate these WRMSDs and provided funding for research to better understand the causes, but there are still significant barriers to these issues.
- Sonographer representation within ASE Leadership is disproportionate to the percentage of sonographer members. However, it is encouraging that the ASE Leadership Academy created in 2018 currently includes double the initial sonographer membership per cohort.
- The price of live courses including the ASE Scientific

Sessions has increased in recent years. Combined with a decrease in employer-provided educational funds, the ability of sonographers to attend live courses has been negatively impacted.

- Concerns about Artificial Intelligence (AI) decreasing the need for sonographers or greatly reducing our role are repeatedly raised. We believe the current use of AI on ultrasound equipment helps to streamline our workflow and will help rather than displace jobs.¹⁰

Simply put, cardiac ultrasound saves lives. The reason our ASE cardiologist/sonographer partnership has survived for so long is that we are and will always be the pathway for providing diagnostic images and data to the cardiologist. Sonographers have initiated and participated in many changes to our profession and ASE in the last 50 years. Indeed, adaptability has always been key to progress in our profession. ASE must also adapt to change by continuing to support and expand the role for sonographers within the organization.

This text also appears in the August issue of JASE ([OnlineJASE.com](https://www.onlinejase.com)).

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Sonographer

VOLUNTEER OF THE MONTH-JULY

Congratulations

**Neha Soni-Patel, MEd, BSME,
RCCS, RDCS (AE/PE), FASE**

*Cleveland Clinic Children's
Cleveland, Ohio*



where our CHD population needs it most.

I am responsible for training new hires, fellows, and anyone who wishes to learn more about congenital heart defects and their echo imaging. My position is unique

because it is a dedicated position to educate and advance the lab. As a work leader, I create and present lectures throughout the year to educate our sonographers, nurses, medical students, visitors, and echo students. I am also responsible for echo reviews to maintain a high-quality lab.

I have been an adjunct instructor of pediatric echo for 11 years. I love teaching new sonographers who simply soak up all the education around them. There is nothing better than watching a student grow in just a few months. They first come in a little overwhelmed and leave with confidence and knowledge of cardiac anatomy and congenital defects.

When and how did you get involved with cardiovascular ultrasound?

There comes a time in one's life when you are at a fork in the road...the secret of the fork is that you don't know it's a fork until you have travelled far into your chosen path. In 2007 I was making an important decision: Do I re-enter the job market as a Mechanical Engineer, or do I explore something else? By chance, I stumbled upon my local ultrasound program and decided to "check it out." I needed to find a profession that would allow me to continue to be the CEO of the Patel Homestead while making sure I felt fulfilled academically. By chance I found echo and life was never the same. The mechanics of the heart amazed me and I couldn't get enough of the science behind every heartbeat. By the time I graduated, I knew I was going in the direction I was meant to go and there was no turning back.

What is the name and type of facility/institution at which you work, and what is your current position?

I am currently the Education Work Leader at Cleveland Clinic Children's in Cleveland, Ohio. Our team is 20 sonographers strong and still growing. When I first started, we were 10 sonographers and it has been a fantastic journey watching our team grow. We have our main hospital and three other regional hospitals, all with pediatric units. In addition to four hospitals, we have 13 satellite locations to help CCC provide care

When and how did you get involved with the ASE?

I was always taught to stretch your career as far as it could go. You can't do that without knowing what is happening outside the four walls of an office. I became a member of ASE during my first semester of echo school in 2009. At first, I thought it would be a good resource for me. I admit, going from engineering to Mom to healthcare was a huge swing and was quite difficult. Going to college the first time seemed like a breeze compared to trying to juggle three children under eight years old. By joining ASE I hoped I would find a way to help me truly understand the profession. I quickly realized there was more than just "how to" in the journals. Each JASE was filled with new revelations

and guidelines. I was watching a profession grow right in front of me. My favorite was to read the blue pages of JASE because I could feel the passion within each line. Little did I know that in just three years, I was about to meet the authors of the articles I was reading.

Why do you volunteer for ASE?

I have to ask this question back to the reader...why wouldn't someone volunteer for ASE? For me, it is an honor to volunteer for an organization that advocates for cardiovascular teams which include physicians AND sonographers. There is a place for everyone at the table and I quickly found a voice at ASE. That voice had an impact. Diversity and Inclusion, Guidelines, and Global Missions are only a few of the volunteer teams I have been a part of. In each team, I have made suggestions and found a platform to teach and educate sonographers. I volunteer for ASE because it allows me to make my job a career and make this career my passion.

What is your current role within ASE? In the past, on what other committees, councils or task forces have you served and what have you done with the local echo society?

My first step in ASE was to apply for the sonographer travel grant for the ASE Scientific Sessions in National Harbor in 2012...yes the one when we lost power. I didn't know a single soul in the myriad of 2,000 attendees. But I attended lectures and was in awe as I heard about echo in space and echo in India...two of my loves. That is truly where my story started. I joined ASE's Global Mission to India in December 2012 and I haven't stopped since. I achieved my FASE designation in 2017. I have been involved with the Diversity and Inclusion Task Force, ASE Hill Day, Ethic and By-Laws Committee, Education Committee, Member at Large of the Cardiovascular Council Steering Committee, and Member at Large on the Pediatric and CHD Council. I recently rolled off the ASE Board of Directors as Member at Large and will move into the chair-elect position of the Cardiovascular Sonography Council which will end in 2030....gulp...yes the third decade of the 2000's.

I have served as faculty over 30 times in the past 10 years at local conferences in Cleveland, Chicago, Minneapolis, Columbus, and nationally at ASE, SOPE, and SDMS. I am also part of the team at CCI as a subject matter expert to develop the RCCS registry exam. Each faculty appointment has been so rewarding. I love creating new presentations and have been known for

my obsession with PowerPoint animations. Behind all of that success, ASE has been the foundation that has provided for my personal education and connections to other cardiovascular professionals who have guided and inspired me.

What is your advice for members who want to become more involved in their profession or with the ASE?

Just do it. Be an advocate for yourself and your team. Ask for help and help others when they ask you. What's great about ASE is that you can start small and there are so many ways to be involved. Sign up to be a volunteer when the positions open every Fall. You can even start small with micro-volunteer opportunities. If you don't see what you want, then reach out to a member of the board or sonographer councils. Every leader in ASE is ready to support anyone with a passion for echo.

Don't let anyone lead you to believe that one person can't make a difference. There aren't too many sonographers out there...we need every single one of you to propel this profession even further. Change is already happening because of the hundreds of volunteers we have already had.

What is your vision for the future of cardiovascular sonography?

This can be summed up the best by a line that I recently heard. I have made it my advice to anyone who wants to do more:

You are never too old to learn something new...
You are never too young to change the world.

My vision for the future has been the same throughout my career: Global Understanding. I see sonography and sonographers as a recognizable force in the medical community. Physicians will continue to make strides, and they need competent, like-minded, sonographers who can be part of the journey. Sonographers are not just button pushers where we wave a magic wand and cure cardiovascular disease. We are educators, researchers, developers, and pioneers. Many have outgrown the career and are thirsting for more responsibilities and knowledge. Keep driving forward and keep learning. Push the limits of the profession. No one ever thought sonographers would/could be first authors on guidelines or research. No one envisioned sonographers playing a crucial role in the operating room. No one saw it coming when sonographers started breaking through glass ceilings....and yet...Here we are.

Sonographer

VOLUNTEER OF THE MONTH-AUGUST

**Congratulations
Kelly Boegel, ACS, RCCS,
RCS, FASE**

*Starship Children's Hospital
Auckland, New Zealand*



When and how did you get involved with cardiovascular ultrasound?

I entered the healthcare field as a certified nursing assistant in 2005 in hopes of becoming a registered nurse. Over the next few years, I was employed at a dialysis center where I had a change of heart about nursing and began learning about other specialties in the medical field that I could partake in. There were lots of aspects of cardiovascular ultrasound that intrigued me, the technical aspects of obtaining images, the hemodynamics and physiology, the patient interaction and the fact that in this field you are always learning (definitely never a dull moment). I graduated from a cardiovascular ultrasound program in 2010 and have loved being a part of this field ever since.

What is the name and type of facility/institution at which you work, and what is your current position?

I am the Clinical Lead Sonographer for the Paediatric and Congenital Cardiac Services department at Starship Children's Hospital located in Auckland, New Zealand. Starship is the sole provider of paediatric cardiology and congenitally acquired heart disease in New Zealand and the South Pacific. We see all patients, regardless of age, with congenital heart defects or repairs. We maintain a service at our main hospital location in Auckland as well as attendance at outreach clinics though out New Zealand and the Pacific Islands. There are 8 incredible paediatric cardiac sonographers that make

up our amazing team. Each team member carries a role in maintaining the high-quality standards and impressive results that are achieved for our patients in our lab. On top of performing echoes, I am responsible for the day-to-day operations of the lab including

maintaining the roster, monitoring equipment, assisting with QI and cardiosurgical audits, mentoring fellows or visiting/training sonographers, encouraging and helping the sonographers on my team reach their goals, template development, and many other tasks.

“

Volunteering for ASE allows me to give back to the community that has given so much to me.

”

When and how did you get involved with the ASE?

I became a member of ASE in 2010 at the suggestions of my professors. My initial experience with ASE was mainly for accumulating CMEs that are offered at ASE Learning Hub and having the publications in JASE aid in my learning of echocardiography. Over the years I have seen how much more is available to you as a member of ASE. The value that I see in belonging to this Society enticed me to volunteer within the Society. I then obtained my FASE in 2018.

Why do you volunteer for ASE?

Being a cardiac sonographer has significantly changed the trajectory of my life to a life that I didn't know was possible. ASE acts as an advocate for our profession. The organization has provided me with the knowledge, resources, and connections needed to grow in my career and move across the world. Volunteering for ASE allows me to give back to the community that has given so much to me.

What is your current role within ASE? In the past, on what other committees, councils or task forces have you served and what have you done with the local echo society?

Currently I am serving on the Cardiovascular Sonography Council Steering Committee, the Guidelines and Standards Committee, and the Journal Club on X Subgroup for #ASEchoJC. Previously I served on the CME Committee, the PR Committee, and the Scientific Sessions Planning Committee. I have had the honor to act as a moderator, and as a facilitator for the DIY sessions at the Scientific Sessions. I have also partaken in micro-volunteer opportunities within the ASE. In 2018, I was a volunteer with the ASE Foundation for the U.S based health outreach event in Morgantown, VA where I meet some fabulous people including Dr. Ritu Thamann who introduced me to the echo world on Twitter, now known as X, (@boegel_kelly). ASE offers a journal club on X where physicians, fellows, sonographers, medical professionals, and others interested in echo can participate in a discussions on a topic with other echo enthusiasts from around the globe. You can easily join the conversation by searching the hashtag #ASEchoJC. I highly recommend fellow sonographers to participate in this! You will make connections with people that you never thought possible, and you never know where that may take you.

Outside of the ASE I have volunteered with Cure-Kids Fiji to train healthcare professionals to perform screening echocardiograms for the detection of rheumatic heart disease and congenital heart lesions. I have been a speaker for the Echo Supervisor Summit, organized by inspirational sonographer Tony Foshaw, and the Cardiology Special Interest Group for the Paediatric Society in New Zealand. Prior to my move to New Zealand, I was the Vice President and Website Coordinator for our Milwaukee area local echo society TEAM (Technological Echo Association of Milwaukee).

What is your advice for members who want to become more involved in their profession or with the ASE?

Just do it! Becoming more involved will open your eyes to how big the echo world is. Find a mentor who is accomplishing goals that you aspire to achieve. Don't be afraid to reach out and connect with people. I have met some fabulous inspirational people by becoming more involved in the ASE. Attend the Scientific Sessions, such a great event filled with passionate people who want to share their research, imaging techniques and the latest advancements in echo. If you have never attended a Scientific Sessions, this year's session in Nashville is the ONE to attend, as ASE is celebrating 50 years. If you are nervous to be part of such a big society, start small with your local area echo society. The ASE has so many great avenues that you could choose to explore. Be a member on a committee, go on a mission trip with the ASE Foundation and participate in the discussions on Connect @ASE. Watch for the Call for Volunteers and apply. Please join X and participate in the ASE echo journal club. If an opportunity presents itself, do not hesitate, jump in and see what all the fuss is about!

What is your vision for the future of cardiovascular sonography?

As technology improves, I continue to be impressed by everything that we can accomplish with an ultrasound machine. I think the future is very bright for echo. Especially with all the great visionaries working in the field who continue to look for approaches for using echo to continue to improve cardiac care. There has been so much growth just in the last decade, I cannot wait to see what the next decade and beyond brings!

What Does an Intensivist Want on an Echo Exam?

Contributed by **Michael J. Lanspa, MD, FASE**, Intermountain Medical Center, Shock Trauma ICU, Salt Lake City, UT



The role of echocardiography in managing critically ill patients has grown. Many intensivists use POCUS in their routine evaluation of patients.

LAST WEEK, I WAS managing a patient in the intensive care unit who had pneumonia, acute respiratory distress (ARDS), and septic shock. He had already received four liters of crystalloid in the emergency department. He was receiving norepinephrine and epinephrine. He was intubated, receiving 100% oxygen, yet was still hypoxemic. I faced decisions typical with these patients: should I administer more fluid, more vasopressors, more positive end-expiratory pressure (PEEP)? Should I prone this patient?

The role of echocardiography in managing critically ill patients has grown. Many intensivists use POCUS in their routine evaluation of patients. Some have pursued additional training in critical care echocardiography. In 2019, the National Board of Echocardiography began offering a board exam in critical care echocardiography. However, board certification is not the norm. Many intensivists have limited knowledge of echocardiography beyond basic POCUS. Most intensivists still rely on their local echo lab and their cardiologist colleagues to help manage patients. Many of the standards in echocardiography reporting were developed for patients who were not experiencing multiorgan failure, and many of the assessments intensivists care about are omitted from routine echocardiography examinations.

Perhaps the most important assessment is that of fluid responsiveness. Fluid responsiveness can be assessed by respirophasic changes in stroke volume or vena cava diameter. The accuracy of these assessments varies with physiologic status. For example, stroke volume variation requires a regular rhythm to be accurate. Both aforementioned techniques require passive ventilation and larger tidal volumes than is typical for a patient with ARDS. Other techniques for fluid responsiveness include assessments of stroke volume with a passive leg raise or end-expiratory and end-inspiratory hold. These assessments are extremely valuable for the practicing intensivist, but they are often performed incorrectly or inconsistently, even by intensivists who are trained in these techniques. Incorporation of these techniques by the echo lab would require some additional training from the echo lab and interpreting physicians, but could be easily incorporated, as it is a relatively mature technique.

Equally valuable would be the incorporation of interventions that perturb preload, afterload, and contractility. An ejection fraction of 52% and a heart rate of 70 in a patient receiving high doses of catecholamines is likely abnormal. A patient who has a collapsing vena cava after recently receiving four liters of crystalloid is likely either hemorrhaging or rapidly extravasating fluid. A report that describes the vena cava as “normal” fails to account for the clinical state of the patient. Positive pressure ventilation and pulmonary pathology can result in acute cor pulmonale. Increasing PEEP in those patients could acutely worsen hemodynamics or precipitate death. The intensivist might be more cautious with PEEP titration if they were aware that the right ventricle appeared to be experiencing high afterload. A hypovolemic hyperdynamic patient may have substantial radial contraction and relatively little longitudinal contraction, resulting in an intermediate or high E/e' . This measurement might be interpreted erroneously

At present, there isn't a simple mapping that correlates echocardiographic findings to preload, afterload, and contractility without incorporating the patient's physiologic state.

as having adequate preload by a physician unfamiliar with echocardiography, while the sophisticated echocardiographer recognizes the limits of ventricular diastolic expansion and can better interpret preload.

There is evolving interest in diastolic assessments and their application to diuresis, dialysis, and liberation from mechanical ventilation. Similarly, strain echocardiography might recognize septic myocardial dysfunction otherwise missed by ejection fraction. It may be premature to incorporate these applications to routine critical care echocardiography, but echocardiographers should be prepared to address these aspects when they reach a point of sufficient need.

At present, there isn't a simple mapping that correlates echocardiographic findings to preload, afterload, and contractility without incorporating the patient's physiologic state. It is for precisely this reason that physiologic status should be incorporated as part of the report. Ventilator settings, respiratory effort, pulmonary pathology, vasoactive drug doses, administration of fluid all offer insights into the interpretation of echocardiographic findings.

Lung ultrasound is an easily acquirable skill that is valuable in the critically ill patient. Presence of B-lines on lung ultrasound may suggest extravascular lung water. Coupled with echocardiography, it may differentiate between cardiogenic pulmonary edema and lung edema from ARDS. Lung ultrasound is not only useful for the intensivist, but also for the general cardiologist as a supplement to echocardiography. It is a skill that every echocardiographer should learn.

Critical care as a specialty is obsessed with monitoring. We monitor vital signs, electrocardiography, ventilatory settings, mental status, and many other data. Limited echocardiograms could be performed serially after PEEP titration, or administration of fluid or vasoactive medications. Very few echo labs have the resources or workflow to handle this sort of request. We need infrastructure and remuneration that will allow for 24-hour serial imaging and interpretation. One proposed model could use an advanced practice provider and sonographer to serve as an on-call service for the emergency department and inpatient service. The economic argument for this model is that of improved cost savings through better outcomes and improved workflow.

So, what should the echocardiographer include in their report? It may be premature to advocate for new standards, although these questions are being asked within the Society. A greater emphasis on loading states and physiologic status may be useful for the intensivist. Simply acknowledging the amount of ventilatory support or vasoactive medications in the report and incorporating that information into the interpretation could be valuable. Assessing fluid responsiveness and lung ultrasound would require more work on the part of the echocardiographer but would offer substantial benefits in patient care. Most important (and most difficult) is securing hospital and laboratory resources to allow for serial imaging, including after hours.

This is an exciting era for echocardiography, as many other specialties are discovering non-traditional applications for echocardiography. The leadership within the ASE has supported this endeavor.

This is an exciting era for echocardiography, as many other specialties are discovering non-traditional applications for echocardiography. The leadership within the ASE has supported this endeavor. ASE has fostered strong relationships with other professional societies to advance these new applications, by both offering expertise in echocardiography and listening to the needs of their partners in medicine. We are seeing this presently with increased interest in POCUS and non-traditional echocardiography applications within the ASE scientific community. As the field of echocardiography grows, ASE will collaborate with other specialties to remain at the forefront of patient care.

Building the Bridge -

Adult Congenital Heart Programs Continue the Care

Contributed by **Rita France, RDCS, RDMS, RT, FASE**, Children's Mercy Hospital, Kansas City, KS, and **Rebecca Klug, BA, ACS, RDCS, (AE, PE), RT(R), FASE**, Mayo Clinic, Rochester, MN



The prevalence of congenital heart disease (CHD) in the adult population has been estimated at 3000 in one million of all adults.

THE PREVALENCE OF congenital heart disease (CHD) in the adult population has been estimated at 3000 in one million of all adults¹ with approximately 20,000 CHD patients entering adulthood every year.

To support these patients, many pediatric programs are not just creating more robust programs for transitioning their pediatric patients into adult programs for care but are collaborating with adult counterparts to form adult congenital heart disease (ACHD) programs.

Growth for these programs often includes the establishment of specialty clinics such as a single ventricle or electrophysiology clinic as well as support of specialized providers such as hepatologists and dietitians. Diagnostic imaging support may require additional training and education for adult staff by pediatric educators as well as establishing imaging protocols that are pathology and/or intervention driven.

In the process of building an ACHD program, many will pursue obtaining credentialing to validate the standard of care provided for both the patient and their insurance payors. The Adult Congenital Heart Association (ACHA) website states that there are currently 53 ACHA ACHD accredited programs in 27 states. The Intersocietal Accreditation Commission has also added ACHD credentialing for adult echo labs that are providing imaging for these patients. The credentialing process does provide a template for documenting the structure of a program, but the process may prove challenging.

This article endeavors to share some insight from both new (Children's Mercy) and established (Michigan) programs with readers that may have interest in initiating programs for patients in their own communities.

INTERVIEWEES

Brian Birnbaum, MD, ACHD Physician, Children's Mercy, Kansas City, MO

Tara Shores, BSN, RN, CBC, ACHD Program Manager, Children's Mercy, Kansas City, MO

Mark D. Norris, MD, MS, Associate Professor of Pediatrics, Associate Professor of Internal Medicine, University of Michigan, Ann Arbor, MI

What initiated the interest in building an ACHD program?

Brian: We have an excellent relationship with our adult partner institutions which started many years ago. We are always looking to get better and to enhance care for our patients. As more children with CHD reach adulthood, we believed that a formalized relationship would be the most effective route to enhance patient care.

Mark: The Adult Congenital Heart Program was formalized as a shared program between the Department of Pediatrics and the Department of Internal Medicine. Both pediatric and adult cardiology divisions recognized the unique needs and physiology of people who had grown up with these heart conditions and supported the development of expertise in diagnostic testing, outpatient care, and inpatient care.

Over time, ACHD training and certification for individual providers was formalized, and a subspecialty board certification for adult congenital cardiology became available. Dr. Tim Cotts and I completed the very first offering of this certification in 2015. In addition to individual provider training and certification pathways, the ACHA provided a path for medical centers to be accredited as ACHD accredited care centers. We chose to participate in this accreditation to provide people with congenital heart disease the means to identify centers with the knowledge and expertise for their lifelong care.

An ever-increasing number of patients in the Adult Care system at the University of Michigan

BRIAN BIRNBAUM, MD



have adult congenital heart disease. Expertise in congenital echocardiography is needed across the medical system specifically across both the C.S. Mott Children's Hospital Congenital Heart Center as well as in the Frankel Cardiovascular Center in the adult care system. The need for this echo expertise was evident based on where patients presented both for follow-up and for new congenital diagnoses at all ages.

What has worked out well and what barriers or challenges have you had to manage?

Brian: Our long-standing relationship with clinicians at the institutions and commitment to this endeavor has been very helpful. The most significant barriers have been in the legal/administrative aspect and medical record exchange. Institutions have different requirements and both sides needed to be flexible while also keeping with standing policies. We have been fortunate that our heart center leadership have been very supportive of this endeavor.

Tara: Meshing two hospitals with considerations of geography, and variations in institutional policies and guidelines is challenging, but constant communication between coordinators and meetings with defined agendas inspired teamwork toward common goals. These efforts have resulted in building strong, working relationships

between providers, staff and the institutions and have provided a great foundation for growth.

Mark: As a faculty member at the University of Michigan, I am credentialed to practice across the medical center as both a Pediatrics and Internal Medicine physician. This allows imaging expertise to be applied where the patients are physically located, as opposed to requiring patient to always travel to a single echo lab. The physical spaces are attached under one roof in one medical complex consisting of multiple hospital and clinic buildings. We are fortunate to have administrative, medical credentialing, and physical connectivity across the institution. Many centers have additional barriers in all those areas.

One current barrier is matching sonographer expertise with the patient's cardiac congenital complexity both anatomic and physiologic. This barrier is addressed with sonographer education and specific congenital study workflow. For example, an adult with complex congenital heart disease such as single ventricle anatomy with Fontan repair may be imaged in the adult echo lab with a special workflow including sonographer review of the study with a congenital echocardiographer prior to the patient leaving the echo lab. This allows the sonographer to be directed

MARK D. NORRIS, MD, MS



to additional imaging or allows the echocardiographer to go to the bedside to obtain additional images personally. This side-by-side review and additional image acquisition benefits not only the patient, but also provides at-the-elbow education and skill refinement for the sonographer.

Congenital echo expertise applies to TEE in addition to TTE. This expertise may be brought to the patient by completing studies in the congenital echo lab setting or having congenital echocardiographers collaborate on studies performed in the adult echo lab. The expertise is provided in the setting that best meets the patient's needs including image guidance for procedures such as catheter-based interventions. Another area that has worked well is congenital echocardiographer participation in echo lab QA/QI across both echo labs, congenital and adult. This has provided a bridge between the labs for sonographer and echocardiographer education and quality improvement.

Seeking a credential for the program is not mandatory and so what prompted the pursuit of the credentialing through ACHA and what has the program dealt with in this process?

Brian: While credentialing is not required to care for ACHD patients, it helps to provide

TARA SHORES, BSN, RN, CBC



guidelines for what is needed to support these patients. In particular having credentialing is something that administrators can use to see where resources should be allocated. ACHA is also a great resource for patients who are looking for care, as they can see which programs are accredited and know those programs have dedicated resources this specific patient population.

Tara: The credentialing process does provide a template for documenting the structure of a program but can be challenging. Meeting the requirements, encountering credentialing staff turnovers, multiple communications, site visits and cost may also create barriers for providers and staff to manage and should be expected.

Mark: We chose to participate in this accreditation primarily to provide people with congenital heart disease the means to identify centers with the knowledge and expertise for their lifelong care, and to be recognized as one of the Comprehensive Care Centers. It has been a positive experience for our group to review the expectations for accredited centers and to demonstrate how our current program meets those expectations. The process of clarifying our processes internally and meeting with collaborating subspecialties helped define and communicate the contributions the ACHD program provides to patients across the spectrum of care including areas as diverse as imaging, cardio-obstetrics, cardiac catheterization, and CT surgery.

As part of the credentialing process, the site review provided outside perspectives and supported areas of future growth of the program. This helps validate future directions of program development as presented to the medical center leadership.

What is the current state of the program and what are future goals?

Brian: We have just recently obtained ACHA accreditation with our partners, St. Luke's. We are now focusing on program expansion and further development, such as the single ventricle clinic. Finally, we are becoming more active in the ACHD community with further

Tara: Obtain credentialing with all of our adult programs, add more specialty clinics and grow it like crazy!

Mark: The current state of the clinical program is comprehensive ACHD care both at our main site in Ann Arbor as well as multiple satellite clinics. Collaborations will continue to grow including with cardio-obstetrics and interventional cardiology.

The current state of the echocardiography program is congenital expertise available in both congenital and adult echo labs for TTE and TEE. In the future, the current programs will be expanded to meet the rapidly growing number of patients with ACHD in every area of our care system. There is significant overlap with structural catheter-based interventions, and imaging expertise will be needed for the heterogeneous anatomic variation of ACHD.

What advice would you offer to someone interested in starting a program in their community?

Brian: Give yourself plenty of time and dedicated resources. This will involve a commitment from your hospital administration and regular, ongoing discussions with the ACHA.

Mark: The ACHA provides the criteria and requirements for accreditation. These criteria highlight the typical clinical, imaging, and subspecialty collaborations needed for comprehensive ACHD care. This is a good starting point for self-assessment of your program and areas for development.

For congenital echocardiography, the needs of the patient for specialized image acquisition and image interpretation must be considered as well as the additional time and at-the bedside echocardiographer imaging that may be required for complete assessment in the setting of complex anatomy and physiology. The time and skill intensive nature of such studies should be supported by the program to provide the comprehensive care these patients deserve. For sonographers and echocardiographers interested in improving their congenital imaging skills, there are both virtual and hands-on experiences that can help prepare you for this challenging and very rewarding area of imaging and patient care.

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An Interview with PCHD Virtual Course Director's Melissa Wasserman and Shiraz Maskatia

Contributed by **Daniel Forsha, MD, MCS, FASE**, Children's Mercy, Kansas City, MO; **Shiraz Maskatia, MD, FASE**, Stanford Medicine Children's Health, Palo Alto, CA; and **Melissa Wasserman, RDCS, RCCS, FASE**, Children's Hospital of Philadelphia, Philadelphia, PA



The learning expanded outside of imaging congenital heart disease to include career growth, education and healthy work environments.

ASE 3RD ANNUAL PEDIATRIC and Congenital Heart Disease Virtual Conference is fast approaching. It has become a highly anticipated yearly event in the pediatric imaging community. Bruce Landek and Melissa Wasserman did an amazing job of creating this conference and running it for the first two years and for this third year, Shiraz Maskatia joins Melissa to run the show. Here are their words about why you should “attend” this year’s virtual event and how it will differ from the past conferences.

Looking back at the 2nd Annual ASE PCHD virtual echo conference last year, what were the most fun or rewarding aspects of that conference?

Last year we focused this course on sonographers, and the faculty rose to the occasion which was so incredibly rewarding. The enthusiasm from the faculty really made the conference attendees feel energized about learning. The learning expanded outside of imaging congenital heart disease to include career growth, education and healthy work environments. We also branched out of traditional didactic talks and included virtual roundtable discussions. These were so much fun! As always, the PCHD community was so supportive and really helped get the word out for the course, and attendance was great. The conference attendees were engaged with the faculty, with each other and asked great questions. The Virtual Happy Hour is always a lot of fun with everyone getting to know each other and share personal connections.



Melissa Wasserman
and Shiraz Maskatia

What did you learn from last year that you hope to apply to this year's conference?

Attendees enjoy learning about topics that directly apply to their everyday life, and we delivered that for the cardiac sonographer community last year. This year, while keeping some sonographer-focused sessions, we have also made it our goal to have content that appeals to everyone in congenital echocardiography: Fetal, ACHD, research, multi-modality imaging. You name it, we included it. We also received excellent feedback that faculty conversation during the live Q&A was just as educational as the talks themselves. There really was no feeling of intimidation or anxiety when asking questions, so we definitely want to include that this year.

Last year there was a focus on sonographers. It sounds like there's an international focus this year. How does this change the content and faculty speakers for this meeting?

ASE has members from all over the world! Participation in ASE is so rewarding, particularly because we can connect with colleagues who have different professional and life experiences. Because of the cost and hardship associated with international travel, only a small percentage of international members can make it to an in-person ASE event. With the virtual conference, we saw an opportunity to learn from and connect with colleagues from around the globe.

We are inviting international faculty to participate in the conference as speakers and we have one full session entitled "Pediatric and Congenital Heart Disease Around the World" that we are super excited about. It's easy to get engrained in practicing a certain way. Stepping out of your comfort zone and hearing how practice changes with a different patient population or with different challenges can be very helpful.

That said, we will always have a focus on both sonographers and physicians. Like last year, approximately half of our faculty are

sonographers, and all the content is geared towards both physicians and sonographers. We are able to offer all this exciting content (13.0 AMA PRA Category 1 Credit(s)[™]) for a fantastic registration price (\$199 for ASE members, \$250 for nonmembers). The content will be available online for 90 days from after the meeting for those who want to review the talks again.

Walk us through the structure of the conference. Are there particular sessions that you'd like to highlight?

Yes! There is some fantastic content and we couldn't be prouder of the program. In addition to "PCHD Around the World," we have seven other awesome sessions. The pediatric and congenital ASE community has been super active this year. We have had four guideline documents published in the last year! We have invited authors from the pediatric TTE update, targeted neonatal echocardiography, fetal echocardiography, and the upcoming adult congenital heart disease guidelines to guide us through each of these. Our community has also been very active in research this past year. We have a session focusing on some recent advancements in echo, and we are very excited to have the annual "year in review" lecture presented at the virtual course this year! Riding the momentum from last year's debate, we have another one this year on multimodality imaging vs echocardiography for complex cardiac repairs. Like last year, we have fantastic ACHD content and a fetal session. However, the fetal session this year will be a "torture the experts" format. Attendees will have the opportunity to send in video clips of challenging fetal echocardiograms in advance and will receive recognition during the conference. Faculty will be put on the spot to try and come up the diagnosis and will discuss the clinical implications. Finally, we will end with a discussion of how various organizations can enhance career progression, with representatives from PRIISM, Fetal Heart Society, SOPE, ASE PCHD Council, and SCMR.

We are inviting international faculty to participate in the conference as speakers and we have one full session entitled "Pediatric and Congenital Heart Disease Around the World" that we are super excited about.

Is this the first time you both have worked together? Tell us something that surprised you about the other person?

Melissa: Yes – this is the first time Shiraz and I have gotten to work closely together. Having co-chaired this course twice before, I thought I would have to spend significant time showing Shiraz 'the ropes.' I was so wrong! Shiraz jumped right in! He has endless ideas, he is a 'do-er,' and he knows EVERYONE! Congenital imagers from all over the world! I feel so lucky to get to work together now and am confident the course will continue to grow in his and Jen's hands next year.

Shiraz: I've known Melissa through ASE for a number of years, but it's the first time we have gotten a chance to work together closely. In the few months that we've been working together on this, I can say that I know exactly where I stand with her. She pulls no punches and gives it to you straight! She also is incredibly insightful. She has quickly become a go-to for advice, and I have found it super helpful whenever I have reached out.

Myocardial Infarction Echoes:

The Role of Echocardiography in Post Infarct Ventricular Septal Rupture

Contributed by **Abimbola Faloye, MD, FASE**, Emory University School of Medicine, Atlanta, GA, and **Sheela Pai Cole, MD, FASE**, Stanford University, Palo Alto, CA



Ventricular septal rupture (VSR) is a serious life-threatening complication of transmural myocardial infarction (MI) with in-hospital mortality rates up to 60%.

VENTRICULAR SEPTAL RUPTURE (VSR) is a serious life-threatening complication of transmural myocardial infarction (MI) with in-hospital mortality rates up to 60%.¹ Fortunately, the rate of occurrence has dropped due to early revascularization from approximately 2% in early reports to about 0.25% in contemporary studies.²

Predictors and Risk Factors

Risk factors for VSR includes ST-segment elevation, anterior wall infarction, total coronary occlusion in the absence of collateral circulation, advanced age, female sex, prior stroke, high killip class.³ Septal perforating branches which supply the interventricular septum arise from either the left anterior descending artery or the posterior descending coronary artery.

Clinical Presentation and Overview of Management

The size of the septal defect dictates presentation. Small defects may present with mild symptoms such as mild dyspnea, whereas large defects present with acute, fulminant hemodynamic collapse and cardiogenic shock. Symptoms typically appear one to five days after myocardial infarction. The defect in the interventricular septum permits left-to-right shunting of blood, volume overload of the right ventricle, right ventricular

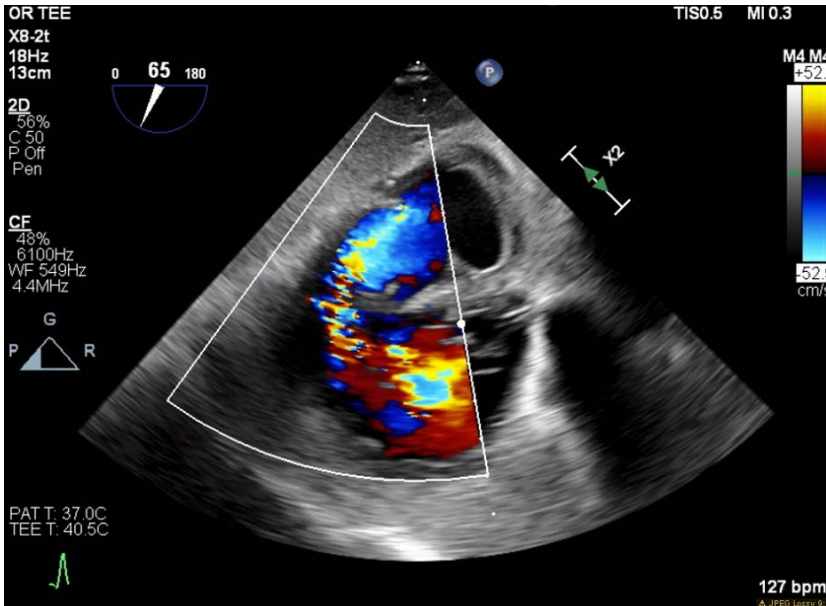


FIGURE 1

Transgastric short axis basal view with color Doppler showing left to right shunt through post-infarct VSD

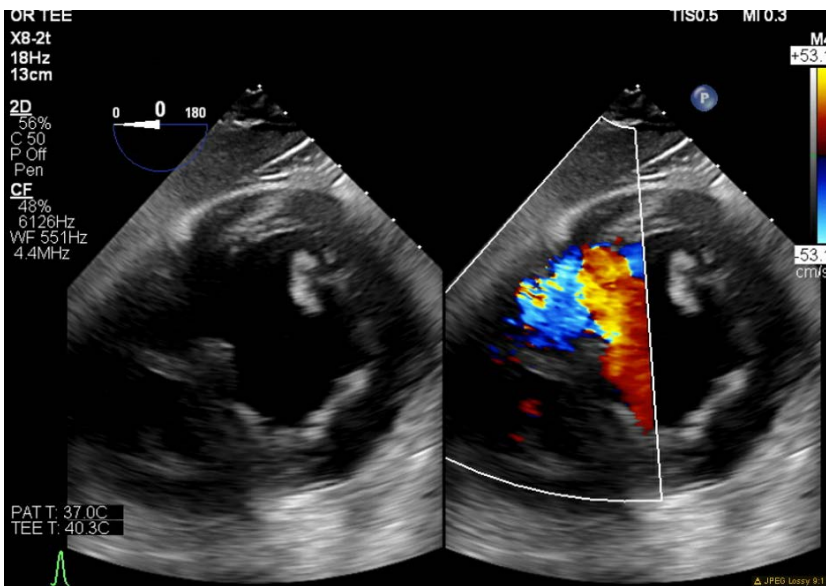


FIGURE 2

Transgastric mid papillary short axis view with color Doppler showing left to right shunt

failure, and decreased forward cardiac output. Approach in management has evolved from conservative medical management, which was almost universally fatal, to immediate surgical repair with subsequent mortality rates approaching 80% in patients with cardiogenic shock. Contemporary management has evolved to techniques that incorporate delayed repair with bridging with temporary mechanical support devices.⁴ Temporary mechanical support has gained widespread adoption because it allows for rapid hemodynamic support and preservation of

end-organ function although there is a lack of robust published evidence to support clinical benefit.

Utility of Echocardiography

Transthoracic echocardiography is the initial best imaging modality for patients with VSR and is recommended as the first line by the 2023 ESC Guidelines for the management of acute coronary syndromes (Class I, Level of Evidence C).⁵ The location of VSR is easily identified by echocardiogram. VSR may be apical, anterior, or posterior depending on the coronary artery affected. Regional wall motion

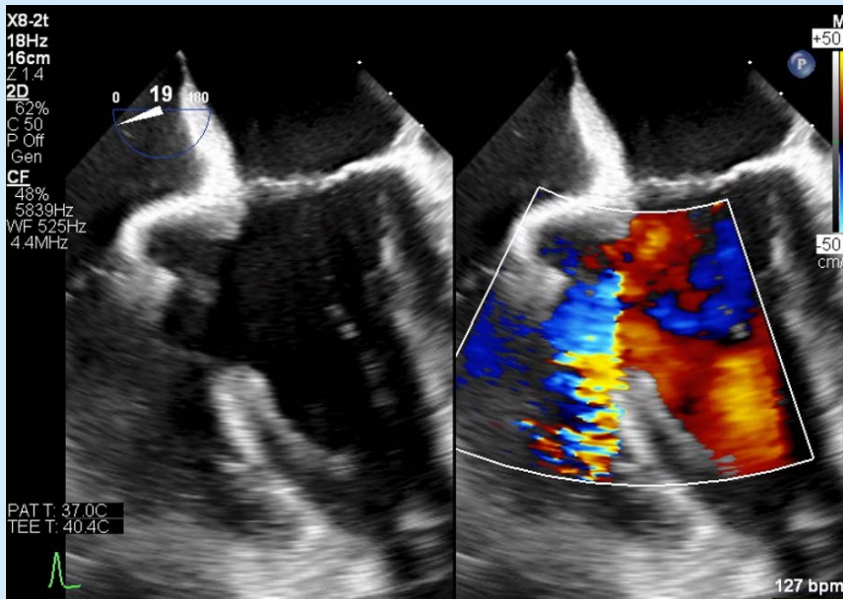


FIGURE 3
Midesophageal 4 chamber view with color Doppler showing a posterior VSD with left to right shunt

abnormalities (RWMA) in the distribution of the affected artery will also be noted. Anterior and apical VSRs are seen in compromise of the left anterior descending artery with concomitant RWMA of the anterior wall of the LV. Posterior VSR is more commonly noted in right coronary artery or posterior descending artery obstruction and has been associated with a higher incidence of biventricular dysfunction.³ Single or multiple rupture sites may be seen. 2D imaging allows for characterization of defect location, size and presence of regional wall motion abnormalities. Color Doppler examination allows for assessment of shunt direction. Other mechanical complications such as free wall rupture, or papillary muscle rupture are also easily identified by echocardiogram. Transesophageal echocardiography may be used to confirm the diagnosis, or in patients with poor acoustic windows in whom TTE is non-diagnostic, and additionally to guide surgical or percutaneous repair.

Approaches to Closure

There is controversy regarding the timing of closure. There may be clinical benefit to delayed surgery, Arnaoutakis et al reported a difference in mortality in patients who underwent repair at less than seven days (54.1%) vs. greater than seven days (18.4%).⁴ There are two approaches to closure of the defect: surgical repair and transcatheter septal closure. Transcatheter septal closure is less invasive

than surgery but is not a favorable alternative unless the septal anatomy is appropriate. Surgical repair may be carried out using a simple patch repair or a hybrid technique utilizing both patch and a septal occluder device placed under direct vision.⁶

A multidisciplinary heart team approach is crucial to assessing, stratifying and managing patients with VSR. Echocardiography is crucial to establishing the diagnosis and monitoring for the development of further mechanical complications.

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Nurturing the Future of Echocardiography

Contributed by **Geetanjali Dang, MD, FASE**, Baptist Health, Jacksonville, FL;
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E3 is a vibrant community committed to fostering career development, clinical education, and research collaboration.

THE EMERGING ECHO ENTHUSIASTS (E3), is an ASE Specialty Interest Group. Dedicated to early career physicians, sonographers, and fellows/sonography students practicing echocardiography, E3 is a vibrant community committed to fostering career development, clinical education, and research collaboration. This dynamic initiative is strategically designed to engage and empower the next generation, fostering their involvement in the activities of ASE.

Key Objectives include:

- 1. Resource Hub for Career development:** E3 recognizes the early challenges faced by early career professionals in the field of echocardiography. Our primary goal is to serve as a comprehensive resource hub, offering insights, guidance and tools to navigate the intricate landscape of career development.
- 2. Clinical Education:** E3 understands the importance of continuous learning in the rapidly advancing field of echocardiography. Through a variety of projects, including tutorials, we aim to share practical "tricks of the trade" that enhance the clinical skills of our members, ensuring they stay at the forefront of advancements.

3. Research Collaborations: Collaboration is at the heart of innovation. E3 facilitates research collaboration among its members, providing a platform for sharing ideas, experiences, and expertise. By connecting early career echocardiographers, we aim to foster a culture of inquiry and contribute to the progress of echocardiography.

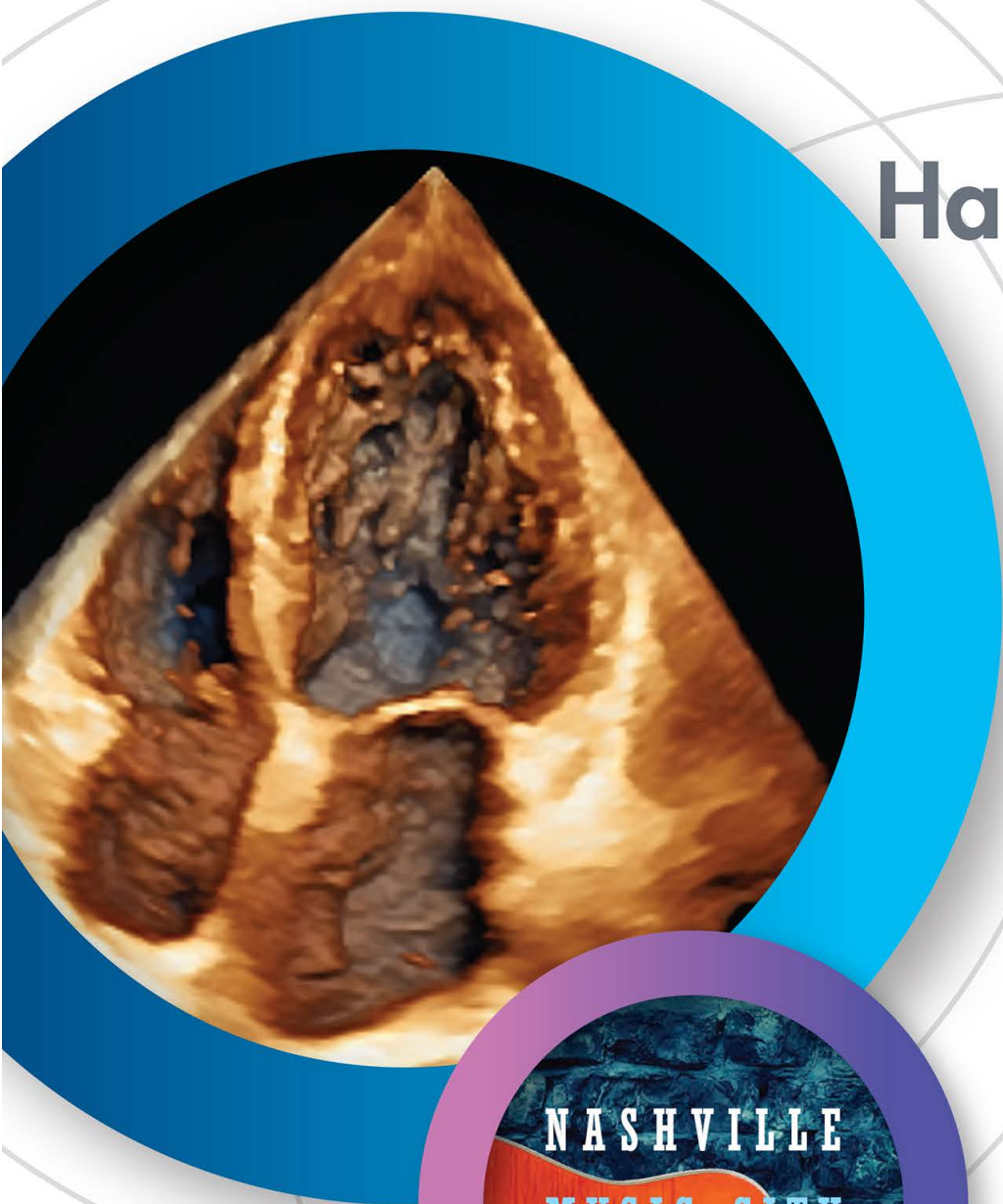
4. Involvement in ASE activities: E3 serves as a gateway for its members to actively participate in the activities organized by ASE. This involvement not only enriches their professional experiences but also contributes to the growth and innovation within the field.

The E3 Specialty Interest Group is committed to expanding its project portfolio to meet the evolving needs of its members. We are continually exploring new avenues to provide valuable resources and opportunities for our community. Our goal is to create a nurturing inclusive environment of involvement, growth and education for early career physicians, sonographers, and fellows/sonography students who practice echocardiography. We would love for you to join us. **Learn more at ASEcho.org/SIGS/E3.**

Our goal is to create a nurturing inclusive environment of involvement, growth and education for early career physicians, sonographers, and fellows/sonography students who practice echocardiography.



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A POEM FOR THOSE WHO LOVE ECHO

ASE Past President Sanjiv Kaul, MD, FASE, received an email from a colleague who has no connection with echocardiography that contained the following poem, *Echocardiogram* by Suzanne Cleary. The poem so delighted Dr. Kaul that he wanted to share it with ASE membership. The poem was published in *Trick Pear* (2006), a collection of poems by Suzanne Cleary. In granting permission for this poem to be included in this issue of *Echo* magazine, Ms. Cleary said, "Most of my poems begin as descriptions written purely so that I will remember a given sight, sound, fact, or experience. My first echocardiogram hit all these marks. When I'm lucky, description leads to something larger or deeper. 'Echocardiogram' started to become a poem when I saw my gratitude to the hard-working heart."



Echocardiogram

by Suzanne Cleary

How does, how does, how does it work

so, little valve stretching messily open, as wide as possible,
all directions at once, sucking air, sucking blood, sucking air-in-blood,
how? On the screen I see the part of me that always loves my life, never tires
of what it takes, this in-and-out, this open-and-shut in the dark chest of me,

tireless, without muscle or bone, all flex and flux and blind
will, little mouth widening, opening and opening and, then, snapping
shut, shuddering anemone entirely of darkness, sea creature
of the spangled and sparkling sea, down, down where light cannot reach.
When the technician stoops, flips a switch, the most unpopular kid in the class
stands off-stage with a metal sheet, shaking it while Lear raves.

So this is the house where love lives, a tin shed in a windstorm,

tin shed at the sea's edge, the land's edge,
waters wild and steady, wild and steady, wild.

ECHO

ASE'S MISSION

To advance cardiovascular ultrasound and improve lives through excellence in education, research, innovation, advocacy, and service to the profession and the public.