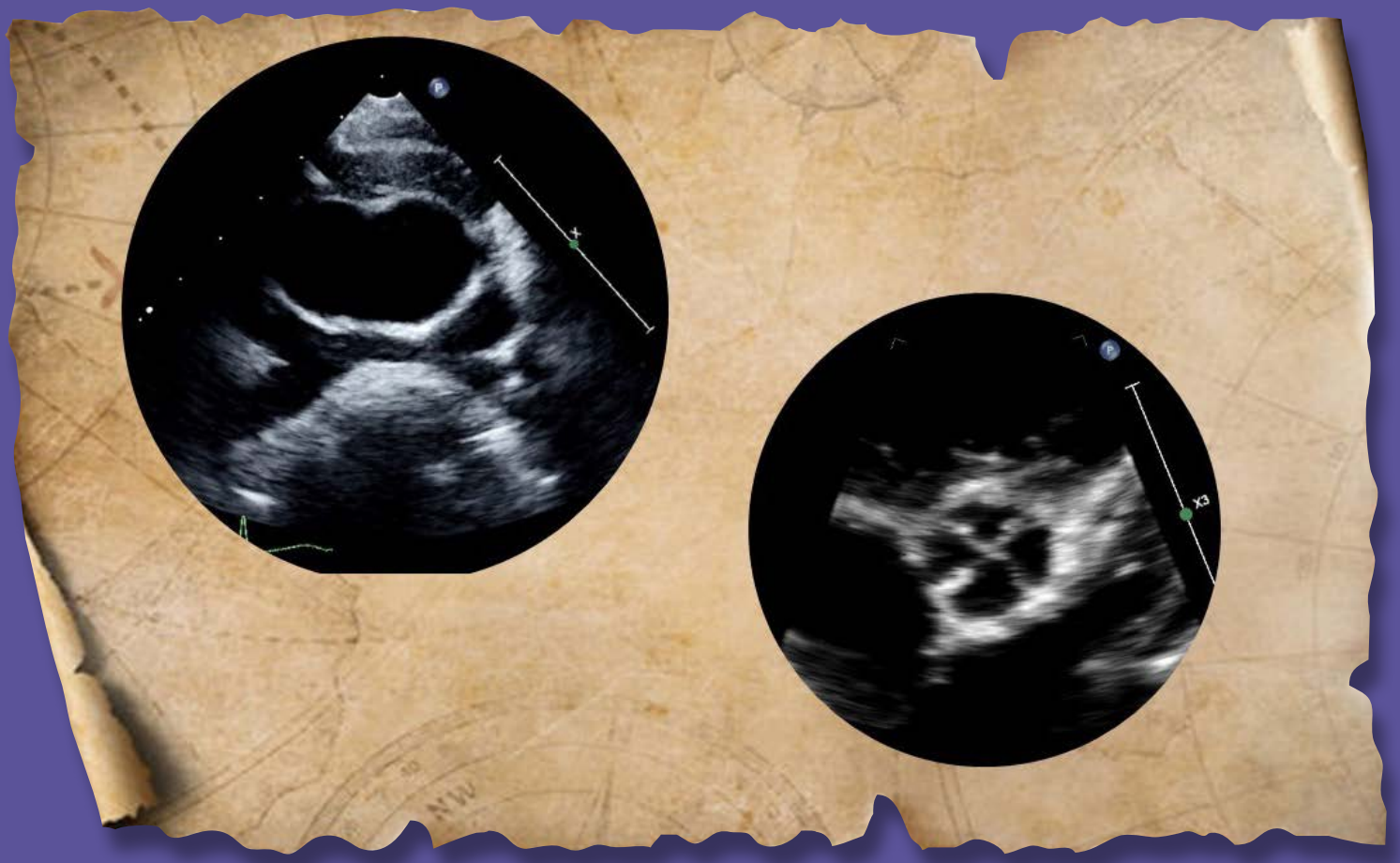
ECHO



JANUARY/FEBRUARY 2025

2025 EDUCATION CALENDAR

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

APRIL 2025

12th Annual Echo Florida

April 5-7, 2025
Disney's Yacht & Beach Club Resort Orlando, FL

Jointly provided by ASE and the ASE Foundation

MAY 2025

5th Annual Advanced Imaging Techniques for Sonographers

May 31-June 1, 2025
Virtual Experience

Jointly provided by ASE and the ASE Foundation

JUNE 2025

4th Annual Echo in Pediatric & Congenital Heart Disease

June 28-29, 2025
Virtual Experience

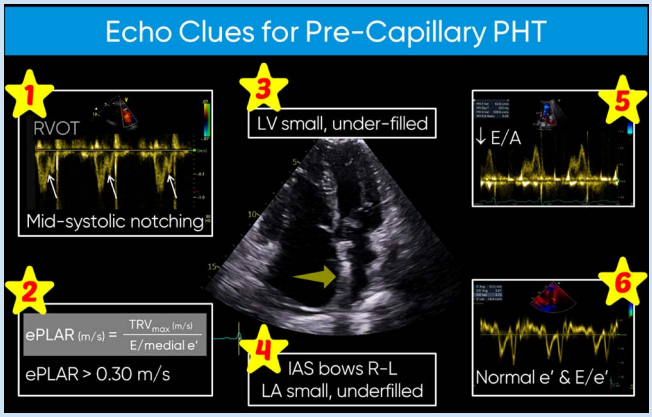
Jointly provided by ASE and the ASE Foundation

SEPTEMBER 2025

36th Annual Scientific Sessions

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

Jointly provided by ASE and the ASE Foundation



Echo Clues to Pre-Capillary Pulmonary Hypertension
Bonita Anderson, DMU, MApplSc, ACS, FASA, FASE, The Prince Charles Hospital - Brisbane, Australia

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

This text also appears in the January and February issues of JASE. ***OnlineJASE.com***

Contents

AMERICAN SOCIETY OF ECHOCARDIOGRAPHY

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American Society of Echocardiography

Cover art: "X Marks The Spot" Denise Fong, BSc, DMU, Starship Children's Hospital, Auckland, New Zealand

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.

President's Message for ***January***

THE INDISPENSABLE AND DIVERSE ROLE OF CLINICIAN-SCIENTISTS IN ECHO INNOVATION



Contributed by ***Jonathan R. Lindner, MD, FASE****, Chair, ASE Research Committee;* ***Daniel Forsha, MD, FASE****, Co-Chair, ASE Research Committee; and* ***Raymond Stainback, MD, FASE****, Chair, ASE Research Oversight Committee*

This last year was sadly punctuated by the death of Arthur "Ned" Weyman, ASE Past President and one of the most impactful physician-scientists in the evolution of echocardiography. In his 1995 Edler lecture, Dr. Weyman expressed concern that the vast majority of cardiovascular imaging science could be categorized as "technology surfing." This term was defined for the audience as a sequence whereby engineers create a new technology with only a murky idea of how to apply it to address a clinical gap. Clinician-investigators were then left to figure out the opportunities and paths to clinical implementation. This particular pathway should not necessarily be disparaged. There are numerous examples of echo technologies that were developed in this fashion and are now used extensively with strong clinical impact. Myocardial deformation assessment by strain imaging is one such example that was developed on the simple premise that it could provide incremental information on ventricular function since it used principles similar to the seminal studies of ex vivo myocardial function decades ago.

"This last year was sadly punctuated by the death of Arthur "Ned" Weyman, ASE Past President and one of the most impactful physician-scientists in the evolution of echocardiography."

One could argue that artificial intelligence (AI) in echocardiography is another example of technology surfing. Physician-scientists in cardiovascular imaging did not design the deep learning algorithms applied in AI research, but they did identify some of the most pressing clinical opportunities and helped establish the robust imaging data criteria which AI algorithms rely on for training and validation. The ASE has placed

“As the individuals currently tasked with research leadership roles in the ASE, it is our job to remind you that the Society continues its long commitment to ensuring a wide spectrum of research endeavors that keep echocardiography at the forefront of clinical care.”

a strong emphasis on AI research based on its ability to improve the impact, accuracy, throughput, and consistency of echocardiography in clinical practice. Yet, it is important to acknowledge that echocardiography research is incredibly broad. Partnerships between clinician-scientists with echo expertise and engineers in academia or industry have been responsible for many technologic innovations that are targeted to unmet clinical need at time of inception. Scientists within our society continue to use advanced imaging to uncover new pathobiology and pathophysiology, or to guide integration of new pharmacotherapies and devices, or to create entirely new approaches for diagnosis and management. Accordingly, no one research topic should be prioritized when there is so much exciting work being done.

As the individuals currently tasked with research leadership roles in the ASE, it is our job to remind you that the Society continues its long commitment to ensuring a wide spectrum of research endeavors that keep echocardiography at the forefront of clinical care. The ASE supports diverse research interests and diverse researchers through a variety of recent and ongoing mechanisms:

1. The E21 Research Grants were daring collaborations between engineers and clinician-scientists focusing on a clinical gap. As a benchmark, most of the recipients funded several years ago leveraged their E21 programs to successfully secure multimillion dollar federal grants to continue their work at the present time.
2. ASE Foundation’s Early-career Development Grants for Echo Scientists (EDGES) program is currently in its second year of existence. These grants provide funding for pilot studies with the ultimate goal of promoting the continued growth and opportunity of early-career researchers who have transitioned out of training and into careers that include imaging science.
3. The Initiative for Collaborative Clinical Science (ICCS) is a program recently conceived by the Research Committee that curates lofty research endeavors targeted to some of our most important clinical gaps. By design, these projects involve collaboration with other stakeholders (industry, foundations, etc.) with common interest.
4. The Industry Round Table (IRT) continues to place emphasis on the free interchange of ideas between scientists from ASE and industry engineers and application specialists.
5. The ASE and the ASE Foundation continue to raise funds to sponsor research awards that recognize some of the most impactful and innovative imaging science at our annual Scientific Sessions.
6. New ad hoc opportunities have continued to arise whereby industry partners or federal agencies have approached the ASE with proposals for research in specific areas of disease. This trend reflects the reputational strength of the Society as a home for creative and impactful science.

Clinician-scientists have always been and will continue to be a vital component in innovation in medical imaging. The ASE continues to fulfill its mission to support established and emerging scientists who are diverse in their ideas and approaches, and who push the envelopes of what is possible in our ever-evolving field.

This text also appears in the January issue of JASE (OnlineJASE.com)

President's Message for ***February***

ADVANCING PEDIATRIC AND CONGENITAL ECHOCARDIOGRAPHY: PRIORITIES, CHALLENGES, AND FUTURE DIRECTIONS

Contributed by ***Craig E. Fleishman, MD, FASE****, Orlando Health Arnold Palmer Hospital for Children and University of Central Florida College of Medicine, Orlando, FL, and Chair of the ASE Council on Pediatric and Congenital Heart Disease Steering Committee; and* ***Pei-Ni Jone, MD, FASE****, Ann & Robert H. Lurie Children's Hospital of Chicago and Northwestern University Feinberg School of Medicine, Chicago, IL, and Chair-Elect of the ASE Council on Pediatric and Congenital Heart Disease Steering Committee*

> Pediatric and congenital echocardiography addresses the unique complexities of congenital heart disease (CHD) across the lifespan.

Echocardiography is the bedrock of cardiovascular imaging, offering unrivaled insights into structural and functional abnormalities. Pediatric and congenital echocardiography addresses the unique complexities of congenital heart disease (CHD) across the lifespan. This is an exciting time to be a member of ASE's Council on Pediatric and Congenital Heart Disease (PCHD) as we focus on priorities, address challenges, and leverage opportunities to drive progress in this field.

Priorities in Pediatric and Congenital Echocardiography

1. Expanding Educational Resources

- Continuing ASE's PCHD Micro-Lesson Modules: The PCHD Micro-Lesson collection offers learners access to more than 10 topics spanning all career stages. Expanding this resource will help practitioners build and maintain competency in pediatric echocardiography.

- Introducing an Imaging Learning Series for Adults with Congenital Heart Disease (ACHD): As more CHD patients

reach adulthood, many present to adult echo labs with unique imaging needs. Developing targeted educational content on ACHD will better prepare both adult and pediatric echocardiographers to evaluate residual defects, late complications, and complex hemodynamics effectively, improving patient access and care.

2. **Updating 3D CHD Echocardiography Guidelines**
   Three-dimensional echocardiography (3DE) in CHD continues to gain importance, transforming how congenital heart defects are visualized and understood. Since the publication of the 2017 guidelines, there have been significant advancements in technology and expanded roles for 3DE. The release of the pediatric 3DTEE probe will require minimal proficiency in 3DE in all future training of pediatric cardiology as we are able to understand finer details of CHD and communicate precise anatomy to our colleagues. An update has been proposed to incorporate these advancements, standardize imaging and post-processing techniques, and refine clinical recommendations.

3. **Developing Pediatric-Specific Quality Improvement Guidelines**
   Tailored quality improvement (QI) guidelines are essential for addressing the unique needs and challenges of pediatric and congenital echocardiography. These guidelines should specify key elements of imaging, metrics for technical quality and completeness, interpretive accuracy, and standardization of quantification.

4. **Encouraging Participation in ASE's ImageGuideEcho Registry**
   The ImageGuideEcho Registry provides a platform for benchmarking and quality improvement. Increasing the participation of pediatric echo labs, especially as the registry prepares to incorporate imaging data, is a priority. Broad participation by pediatric centers will facilitate multicenter collaboration on quality improvement initiatives and research projects that no single center can investigate alone.

> "This is an exciting time to be a member of ASE's Council on Pediatric and Congenital Heart Disease (PCHD) as we focus on priorities, address challenges, and leverage opportunities to drive progress in this field."

5. **Promoting ASE's 50th Anniversary and Celebration at Scientific Sessions**
   ASE's 50th anniversary is a milestone and an opportunity to highlight ASE's legacy in pediatric and congenital echocardiography. The PCHD Council is promoting this landmark event through a yearlong effort to increase ASE visibility, membership, and engagement, culminating in the Scientific Sessions in Nashville this September.

Opportunities for Improvement and Future Scope

1. **Increasing Engagement of ASE Members Interested in Pediatric and Congenital Heart Disease**
   ASE thrives on the collective efforts of its members. Increasing engagement among those with a focus on pediatric and congenital echocardiography is key to strengthening this community. Opportunities for involvement include committees, task forces, councils, SIGs, webinars, educational offerings, social media, and more recently, focus volunteering. Offering multiple pathways for participation ensures broad representation of the pediatric and congenital echo community.

2. **Mentoring Early-Career Echocardiographers and Sonographers**
   Attracting and mentoring young ASE members is critical to the long-term growth of the Society. Initiatives such as the Mentor Match program provide early-career echocardiographers and sonographers with guidance, resources, and professional development opportunities, establishing ASE as their professional home.

3. **Training and Workforce Development**
   The past five years have highlighted the increasing demand for skilled pediatric and congenital echocardiography sonographers and the need to expand their numbers. Collaboration across ASE disciplines, along with continuing education initiatives such as the Echo in PCHD Virtual Course, hands-on training in new technologies, and mentoring opportunities with physicians and sonographers, is addressing this workforce shortage.

4. **Opportunity for Growth and Innovation: Artificial Intelligence and Automation**
   AI has the potential to revolutionize pediatric and congenital echocardiography by increasing efficiency, reducing sonographer fatigue, and streamlining workflows. Leveraging AI for tasks such as automating measurements and pre-screening echocardiograms allows sonographers to focus on obtaining high-quality images and interpreting complex cases. Improved efficiency in screening echocardiograms also gives clinicians more time to address challenging or ambiguous cases, enhancing overall diagnostic accuracy and patient care. ASE remains committed to leading efforts to integrate AI responsibly and effectively into clinical practice.

5. **Promoting Research**
   ASE grant funding mechanisms allows for early career faculty to apply for grants to help with research in the field of CHD. ASE provides the network infrastructure to help find mentors or collaborators in the field of research. With advancement in innovation and AI interest, the field of CHD is an unexplored area for research in AI. The ASE PCHD council is committed to fostering the future generation of investigators for the field of CHD research.

6. **Global Outreach**
   Expanding access to pediatric and congenital echocardiography through ASE's global health initiatives remains a vital way to connect ASE members with the international community. ASE members can collaborate with international partners to train local providers, establish tele-echocardiography networks, and promote equitable cardiovascular care for CHD patients worldwide.

CONCLUSION

As the field of pediatric and congenital echocardiography continues to evolve, ASE members are uniquely positioned to lead advancements that improve professional outcomes and patient outcomes. By focusing on priorities such as updating guidelines, expanding educational resources, and encouraging registry participation, while addressing challenges of workforce development and member engagement, we can achieve meaningful progress. Together, we can ensure that the next 50 years of echocardiography are as impactful as the last.

This text also appears in the February issue of JASE OnlineJASE.com

Theodore P. Abraham,
MD, FASE
ASE President

Sonographer

VOLUNTEER OF THE MONTH-FEBRUARY

Congratulations
Lindsey Thomas BS, RDCS, RVT, FASE

SSM Health Dean Medical Group
Madison, WI

Q
A

When and how did you get involved with cardiovascular ultrasound?

In the early 90's when I was a young elementary school kid, I would always go with my mom for "Take Your Child to Work Day" (back when they still did that sort of thing!). I remember walking with her around the hospital department, meeting her coworkers and showing me the machines and how they worked. She even came to my middle school with an ultrasound machine for a Career Day demonstration! Needless to say, I was influenced from a very young age to be fascinated with the heart. Fast forward to high school/college and I knew I wanted to be in the medical field. It was an easy decision, especially with my background knowledge of sonography. I declared my major at the University of Wisconsin-Milwaukee and earned a bachelor's degree in biomedical sciences in 2013 with an emphasis on Diagnostic Medical Sonography. My mom thought I was crazy because I saw how much she worked and how often she was called in to the hospital, but all I wanted to do was follow in her footsteps (Love you Mom!). Eleven years later and I still love what I do every day!

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

I currently work as a Staff Sonographer at Dean/St. Mary's Outpatient Clinic in Madison, Wisconsin. I spend most of my day scanning adult patients, but will fill in to scan pediatric patients as well. I love the challenges that both patient populations provide to keep my skills fresh! I am very lucky to be at a facility that allows me to do both, as the congenital population is aging and will need skilled sonographers to decipher the anomalies. I am also fortunate to work with cardiovascular sonography students at our facility during their clinical rotations. I love sharing my knowledge and passion with them, and seeing the lightbulb come on with hard work and practice! It is truly a joy to be even small part of their echocardiography career journey.

> "Collaborating with other sonographers and advocating for sonographers is deeply rewarding. The feeling of making a difference, no matter how small, in the field of sonography is unparalleled."

When and how did you get involved with the ASE?

I've been a member of ASE since 2015 when the hospital I worked for at the time provided financial support to attend the ASE Scientific Sessions in Boston. I was still pretty early in my career and was very nervous to go. I remember being so overwhelmed the whole weekend because I wanted to attend every single panel that was scheduled. Thankfully I went with a few other coworkers who were more experienced than I was at the time, so they were able to help guide me when it came to all the different opportunities. Going to that meeting was very eye opening, and really fueled my desire for learning and teaching others. Teaching sonography students clinically and didactically satiated that desire for a few years, but I still wanted more involvement on a national level. I took a chance and applied for a few focus volunteer projects with ASE until I felt confident enough to apply for FASE and the committee/councils during the call for volunteers. I was selected for the Member at Large position on the Membership Committee, and have been applying for more positions ever since!

Why do you volunteer for ASE?

Collaborating with other sonographers and advocating for sonographers is deeply rewarding. The feeling of making a difference, no matter how small, in the field of sonography is unparalleled. We need to have our voices heard to make the changes that we will see in our daily practice. Even when I started focus volunteering, I still felt a sense of belonging and community. That feeling has only grown the more I volunteer with ASE and continue to meet other sonographers with the same passion as I have for echocardiography.

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?

I currently serve on the ASE Governance Committee (Member at Large) and Cardiovascular Sonography Council (Member at Large). Previously, I served on the ASE Membership Committee (Member at Large) which was my very first appointment on a committee with ASE! I have also completed several focus volunteer projects with ASE, including being a Mentor in the Mentor Match program.

I also currently serve on the SDMS Membership, Awards, and Recognition (MAR) Committee (Member at Large), and have completed several review projects with SDMS. I have been a member of our local ultrasound society (South Central Wisconsin Ultrasound Society - SCWUS) since 2011, and served on the Society Board as the Echocardiography Representative from 2018 - 2021.

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

Start small! Attend a local ultrasound society meeting and help set up/tear down or find a speaker for an upcoming meeting. Work your way up to the "bigger" volunteer work, like focus volunteering. There are always small projects to work on, and the staff at ASE are always so helpful and kind to direct you and answer questions. The Committee positions require more time dedication, but the conversations and topics discussed are always so intriguing with the variety of sonographers that are on the committee. It's truly a wonderful experience to hear everyone's thoughts and opinions on relevant topics in our field. Find a mentor in the field! In person networking is always great for this, so attending the Scientific Sessions or Echo Florida would be in the best interest to get your name and experience out there! If you aren't able to attend a meeting in person, being engaged on social media is also a great idea. I have both a LinkedIn and professional X (@LindseyTEcho), so let's start a conversation!

What is your vision for the future of cardiovascular sonography?

While attending the 2024 ASE Scientific Sessions in Portland, Oregon, a huge topic that was mentioned in several different panels was Artificial Intelligence (AI) and the pros and cons in the medical field. It was a very polarizing topic, but I would love to see how we could harness AI to work in conjunction with the quality of our exams and reporting.

The future of cardiovascular sonography also begins with education: Educating high schools and colleges that sonography is an option in the medical field besides being a doctor or nurse. Educating patients so there's not the dreaded questions: "Did you have to go to school for this?" and "Is this all you do all day?" Educating each other to stay informed about guideline updates and new recommendations. Educating ourselves by advancing our degrees and becoming Advanced Cardiac Sonographers to drive out field into the forefront of compassionate and competent healthcare.

PRACTICING ABROAD

WORKING as a cardiac sonographer has opened doors that I never thought would be possible as a young adult. One of those doors was moving permanently outside the United States. I accomplished this by accepting a job as a cardiac sonographer at Fallen Soldiers' Memorial Hospital in Hastings, Hawke's Bay, New Zealand in January of 2021. At the time this was possible because cardiac sonography was on a skills shortage list that allowed me and my family to gain a "New Zealand Visitor Visa – Critical Purpose" to move, work, and study in New Zealand. I received my visa in March 2021 and on April 13 we got on a plane and landed in New Zealand April 15th.

OUR new adventure started with a two week stay on the South Island in Christchurch in a MIQ (Managed Isolation and Quarantine System) facility.

THEN we were on another plane to Napier, Hawke's Bay where we found a place to live, and I started work at the hospital. Hawke's Bay is a beautiful region of the eastern side of the North Island famous for its sunshine and vineyards. The hospital building was like taking a step back in time. Originally built in 1927 with additions made in the 1960s. I had to get used to the UK English terminology for things: Wards (Inpatient departments), Sluice (soiled utility room), TOE – transoesophogeal (TEE transesophageal), and so on.

Contributed by
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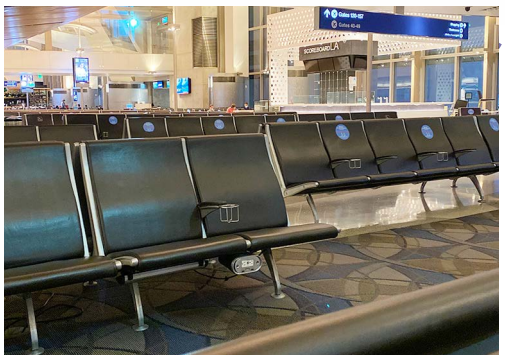
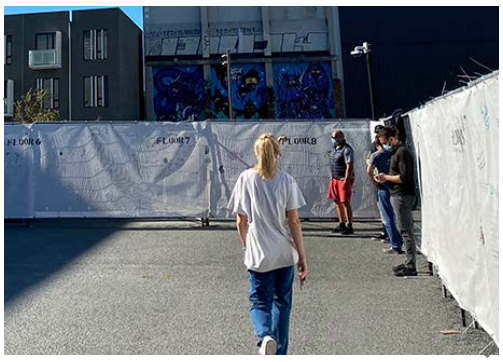
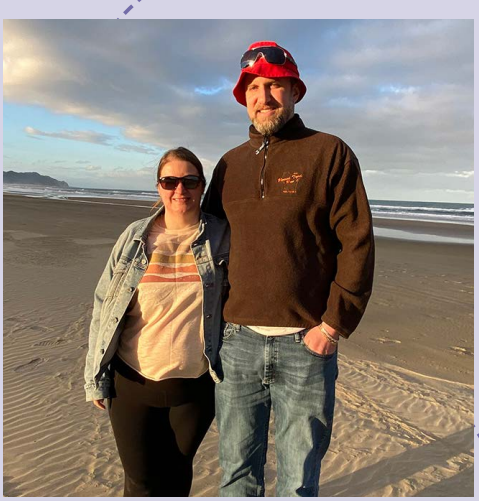


We traveled during the height of the COVID-19 pandemic. This was a strange time to travel. Tom Bradley International Terminal at LAX was eerily empty as was the plane.



Dedicated outside time only with passengers on the same flight as ours.

Fallen Soldiers' Memorial Hospital in Hastings



Me and my husband Jesse at Ocean beach, Hawke's Bay (one of the many expansive beaches in New Zealand)

Using small plane to provide outreach services to those living large distances from the hospital.

Starship Sonography Team: From left to right Hannah Hartsig, Steven Kiyokawa, Denise Fong, Lauren McCann, Kelly Boegel, and Scott Harris (missing Megan Burrows and Victoria Nassau-Reffell)

WORKING as a cardiac sonographer in New Zealand, especially in one of the more rural or remote areas, changes the way you operate as a cardiac sonographer in some respects. One was getting accustomed to working in the public health system in a country with a national health program. Patients are scheduled differently, there are less resources available, normal 8:30 AM to 5:00 PM shifts with no weekends, on call, or holiday coverage. We also provided outreach services to those living large distances from the hospital.

MY first time experiencing this was with the Hawke's Bay Cardiology team attending clinic in Wairoa, Hawke's Bay. For this we took a small plane that had just arrived back at the Napier airport from a mail/goods delivery. The plane landed and the pilot plopped all the seats in place, everyone on the team jumped in, and off we went. It was a windy day, and the plane was swaying back and forth. I was thrilled when we landed.

AFTER a year living in the Hawke's Bay, a new opportunity opened and I was offered a job as the Clinical Lead Sonographer for the Paediatric and Congenital Cardiac Services department at Starship Children's Hospital in Auckland, New Zealand. Auckland is 424 km (263 miles) from Hawke's Bay, so we picked up and moved again. Starship is the sole provider for paediatric cardiac care for all of New Zealand as well as a number of countries within the Pacific Islands. We provide training and educational opportunities for sonographers and doctors from around the country and the Pacific Islands. I work with an amazing team of sonographers and consultants at Starship that I feel lucky to be a part of. The sonography team works collaboratively to give the best care to our patient population.

BEING a member of the Starship team, I have had the opportunity to partake in outreach clinic services in various countries in the Pacific. Some of the patients we see end up coming to New Zealand for surgical or catheter interventions.

View from hospital in Port Vila, Vanuatu.

THROUGH my work at Starship, I was presented with the opportunity to volunteer with CureKids Fiji to help train medical professionals from Fiji and Tonga to perform screening echocardiograms for Rheumatic Heart Disease (RHD) and identifying some congenital heart disease. This was an amazing experience that will help to improve early identification of RHD to prevent advanced cardiac complications.

THERE are some important points to consider if you want to look into moving to another country. First off, not all countries employ cardiac sonographers. In most countries, echocardiograms are performed by the cardiologist. Some countries that do are New Zealand, Australia, England, Guyana, Singapore, Canada, and India. Each country has its own unique educational and registration requirements to be employed in the role. Each country has different rules on the requirements to obtain a visa to live, work, and receive public services for that country.

LIVING in the land of sheep and hobbits has been amazing. I would highly recommend taking a leap of faith and living abroad if the opportunity arises. You can always go back to what you are currently doing, but I don't think you will.

A hobbit hole from Hobbiton

One of the 23.59 million sheep in New Zealand. For perspective, the human population is 5,213,944

RHD training session 1 – Facilitators from New Zealand included myself, fellow sonographer Leighton Jones, and Cardiologist Mansi Turaga, Maryanne Kora'ai (Paediatrician from Fiji), and Sukafa Matanaicake (Cardiologist from Fiji)

Scan Lab teaching

RHD training session 2 – Facilitators from New Zealand included myself, fellow sonographer Leighton Jones, and Paediatric Cardiologist Bryan Mitchelson, and Sukafa Matanaicake (Cardiologist from Fiji).

"Hybrid Labs - Integrating Cardiac and Vascular Ultrasound"

*Contributed by **Stavros Agorastos, MHA, RDCS, RVT, FASE**,*
NYU Langone Health, New York, NY

Integrating adult echocardiography and vascular ultrasound into a hybrid echovascular lab offers many advantages not only to the patient, but also to the facility as well.

INTRODUCTION

IN TODAY'S WORLD, the term hybrid often relates to the automobile industry, combining a gas engine with an electric motor to create a more efficient vehicle. Productivity and efficiency are just a few elements that help mesh the best of both worlds. Cardiac and vascular ultrasound imaging labs have found ways to integrate with each other for many years now. Integrating adult echocardiography and vascular ultrasound into a hybrid echovascular lab offers many advantages not only to the patient, but also to the facility as well. As each area of ultrasound focuses on a different part of the circulatory system, both often intertwine with one another. Carotid arterial flow can be affected by low cardiac output or severe aortic stenosis. Right ventricular pressure and volume overload can be caused by a pulmonary embolism, stemming from a deep venous thrombosis in the lower extremity. Hybrid labs offer cardiac and vascular ultrasound services providing efficiency and a thorough overview of the circulatory system. As always, our primary concern is patient care. A patient that has stroke-like symptoms can be evaluated in the same facility with a carotid duplex, a transcranial duplex and an echocardiogram to locate a primary source of embolus. A patient with symptoms of a

pulmonary embolism such as shortness of breath and lower extremity pain would much prefer a "one stop shop" of services rather than visiting multiple facilities in different locations. Completing a lower extremity venous duplex to rule out a deep venous thrombosis while also having an echocardiogram to evaluate the right heart for any involvement would fast track the patient with a possible diagnosis and streamline treatment. **Figure 1a** exhibits a patient with a large acute deep venous thrombus located at the common femoral vein extending through the femoral vein down to the popliteal vein. That same patient also had an echocardiogram (**Figure 1b**) revealing severe RV dysfunction, dilated RV/RA as well as severe TR and markedly elevated pulmonary pressures. Both studies align with the diagnosis of a DVT leading to pulmonary embolism, prompting emergent treatment and care.

FIGURE 1a

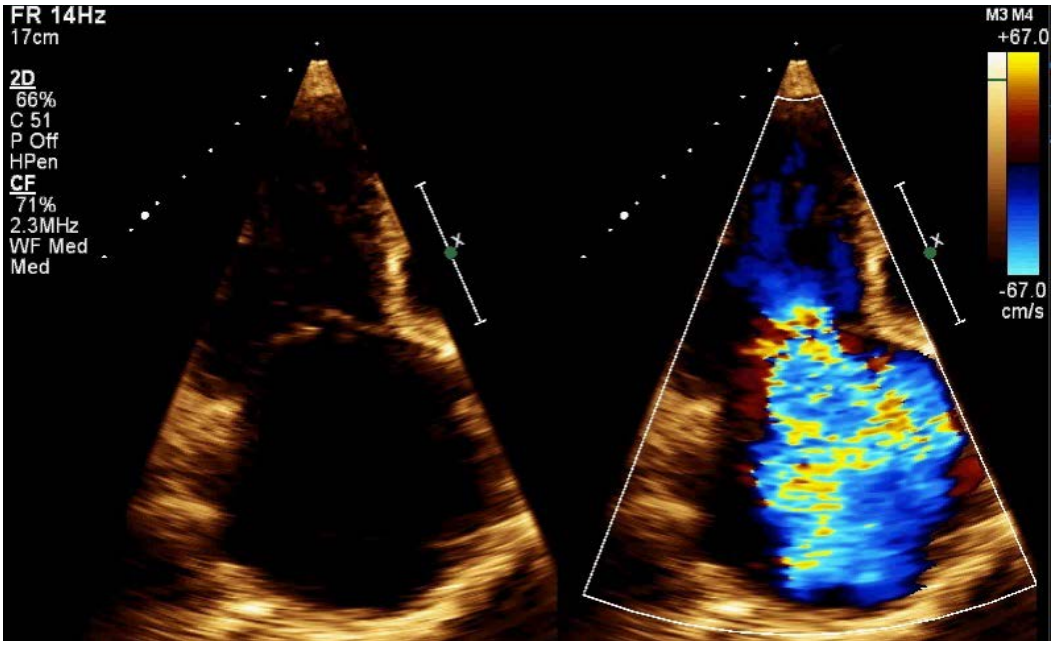


FIGURE 1b

SETTING NEW GOALS

There are concerns that the role of the cardiac sonographer has expanded too rapidly. Where would they find the time and energy to cross train and learn vascular ultrasound, let alone pass another credentialing exam? Cardiac sonographers are in high demand in the structural heart department, the catheterization lab, and sometimes even the electrophysiology lab. Innovations with strain analysis and 3D echocardiography have also expanded the skillset of the cardiac sonographer.

With that being said, in the words of C.S. Lewis, "You are never too old to set a new goal or to dream a new dream." Expanding one's skillset and exploring other areas of ultrasound brings forth additional opportunities. Labs that grow past one modality can expand their volume and transition to a hybrid echovascular ultrasound lab. Sonographers that are dual credentialed in cardiac and vascular ultrasound are more marketable to the industry, leading to more employment opportunities.

Expanding one's skillset and exploring other areas of ultrasound brings forth additional opportunities. Labs that grow past one modality can expand their volume and transition to a hybrid echovascular ultrasound lab.

CREDENTIALS

Ultrasound educational institutions offer programs that often cover more than one modality of ultrasound between general, cardiac and vascular. Dual-certified technologists with Registered Diagnostic Cardiac Sonographer (RDCS) and Registered Vascular Technologist (RVT) credentials through the American Registry of Diagnostic Medical Sonography (ARDMS) or Registered Cardiac Sonographer (RCS) and Registered Vascular Sonographer (RVS) through Cardiovascular Credentialing International (CCI) are preferred. To add technologists to a facilities' accreditation application, whether through the Intersocietal Accreditation Commission (IAC) or American College of Radiology (ACR), they must hold active credentials for that modality. Although this article is focused on the role of the sonographers, it is important to note that physicians can also expand their skillsets by training in the interpretation of vascular ultrasound and credentialing as a Registered Physician in Vascular Interpretation (RPVI) via the examination offered by ARDMS. As outlined by Dr. Alexander Vakili in the March 2024 issue of Echo Magazine, obtaining this credential offers physicians the opportunity to expand their practices to treat the vast field of vascular disease.

CROSS TRAINING

Cross training is a great tool and there are many resources that one can tap into. The ASE Guidelines as well as the ASE Learning Hub provide a wealth of information on cardiovascular pathology and imaging protocols. There are articles, webinars, books, as well as live virtual courses available. I also recommend the following vascular articles found in the *Journal of American Society of Echocardiography* archives:

- Amer M. Johri, et al (2020). Recommendations for the Assessment of Carotid Arterial Plaque by Ultrasound for the Characterization of Atherosclerosis and Evaluation of Cardiovascular RIsk: From the American Society of Echocardiography. *Journal of the American Society of Echocardiography*, 917-933.

- Gerhard-Herman, M. et al (2006). Guidelines for Noninvasive Vascular Laboratory Testing: A Report from the American Society of Echocardiography and the Society of Vascular Medicine and Biology. *Journal of the American Society of Echocardiography*, 955-972.
- Roman, M. J. et al (2006). Clinical Application of Noninvasive Vascular Ultrasound in Cardiovascular Risk Stratification: A Report from the American Society of Echocardiography and the Society of Vascular Medicine and Biology. *Journal of the American Society of Echocardiography*, 943-954.

A great resource for physicians is the ASE RPVI course. It is a comprehensive review of all vascular beds written by some of our world-renowned leaders in cardiovascular medicine such as Muhamed Saric, MD, PhD, FASE, Director of the Non-Invasive Cardiology Laboratory at NYU Langone Health, Rebecca LeLeiko, MD, RPVI, FASE, vascular medicine specialist at Emory Healthcare, and Matthew Vorsanger, MD, RPVI, FASE, Director of Bellevue Outpatient Cardiology. Each area of vascular ultrasound is accompanied by ultrasound image acquisition sections reviewed by Carol Mitchell, PhD, ACS, RDCS, RDMS, RTR, RVT, FASE, a highly esteemed educational researcher at University of Wisconsin. ASE Mentor Match is another great resource pairing people in a six-month mentoring relationship. Mentors provide guidance and support showcasing their experiences as well as their knowledge to their mentees. I had the pleasure of being selected to participate in ASE Mentor Match program. Using my experience as an echovascular sonographer for over 20 years, I had the privilege to be a mentor to a cardiology fellow. During the six-months we shared experiences, including support pathways to develop and cross train their knowledge of 3D-echocardiography, strain analysis, and different areas of vascular ultrasound.

CONCLUSION

The ASE's mission is "to advance cardiovascular ultrasound and improve lives through excellence in education, research, innovation, advocacy and service to the profession and the public." A facility that can provide a comprehensive, all-inclusive list of cardiovascular services, integrating both cardiac and vascular ultrasound, offers benefits to all, but most of all, to our patients.

A facility that can provide a comprehensive, all-inclusive list of cardiovascular services, integrating both cardiac and vascular ultrasound, offers benefits to all, but most of all, to our patients.

Echoes by Nurses?

Why Not?

*Contributed by **Maggie Young, BSN, RN, CCRN**, Shock Trauma ICU, Intermountain Medical Center, Murray, UT; **Grayden Swan, BSN, RN, CCRN, TCRN**, Shock Trauma ICU, Intermountain Medical Center, Murray, UT; and **Michael Lanspa, MD, FASE**, Shock Trauma ICU, Intermountain Medical Center, and Intermountain Critical Care Echocardiography Service, Murray, Utah*



Over the past two decades, the intensive care unit (ICU) has had a substantial increase in availability and use of ultrasound for bedside procedures and diagnosis.

OVER THE PAST two decades, the intensive care unit (ICU) has had a substantial increase in availability and use of ultrasound for bedside procedures and diagnosis. This increase has outpaced the availability of trained providers to perform bedside ultrasound and critical care echocardiography. At the Shock-Trauma ICU at Intermountain Medical Center in Salt Lake City, Utah, we started training nurses in basic echocardiography and point of care ultrasound (POCUS). Michael Lanspa and Maggie Young developed the program, and Grayden Swan is one of the nurses from the first training cohort.

Why train nurses?

Michael: Most of the value in POCUS is recognizing and responding to changes or shock states. A key role of the bedside nurse is monitoring changes in patients. Nurses discover changes on physical examination sometimes missed by the physician. Why not add POCUS to their skillset? They can do their job better with ultrasound.

Grayden: POCUS improves the care I provide for my patients. Since I'm at my patient's bedside much more than the doctors, I can perform serial exams on patients and note the progress of interventions such as adding inotropes, evaluating fluid status, or ruling out immediate complications such as tamponade.

Maggie: In addition to the improvements in care mentioned by Grayden, nurses also want to develop skills as a way of demonstrating expertise. We want to be good at our jobs. Although this is a new field, there is evidence from other nurse POCUS programs demonstrating improved patient outcomes and cost savings.

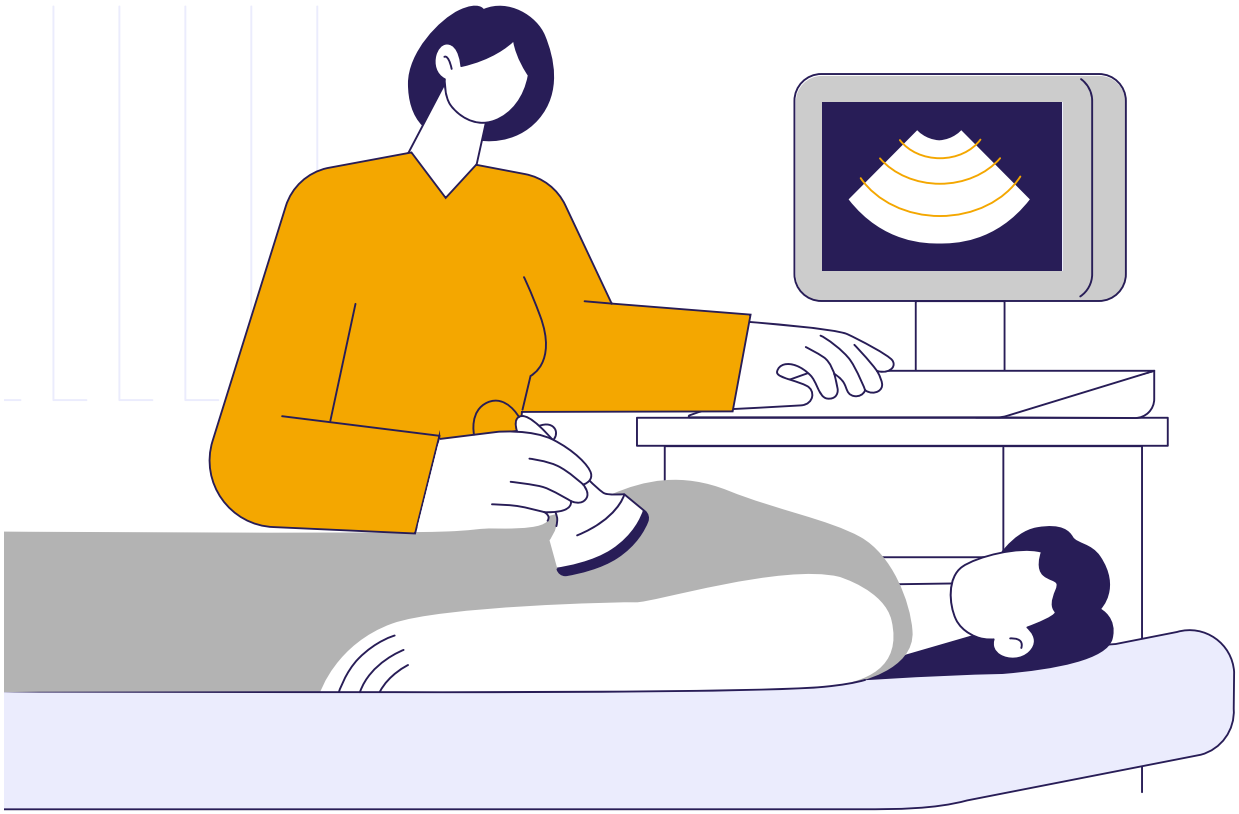
What sort of training did this entail?

Maggie: I worked with Dr. Lanspa to design a 12-week training program on how to obtain and interpret echo and ultrasound images. We initially trained a small cohort of nurses, who met monthly and practiced skills with their patients. We recorded images which were reviewed by Dr. Lanspa. The training focus was on qualitative assessments rather than quantitative.

Grayden: The training was a mixture of hands-on instruction and video lectures. Nurses were encouraged to perform basic echoes on their patients every shift, with the attending physicians often available to coach and advise them to better their skills and abilities. Furthermore, we made use of ultrasounds that had artificial intelligence (AI) that can identify and label structures on the screen and suggest how to manipulate the probe to improve the image quality.

Michael: I agree with Grayden that the AI image guidance really helped with asynchronous learning. I've taught physicians who were reluctant to practice on their own because they would place the probe

> *POCUS improves the care I provide for my patients. Since I'm at my patient's bedside much more than the doctors.*
>
> ***–Grayden Swan, BSN, RN, CCRN, TCRN***



and suddenly be lost. The AI guidance gave the learners enough confidence to image patients on their own. We record images on a separate imaging system, used purely for education. We're also fortunate to work in an ICU where most of our physicians are comfortable with critical care echocardiography. Two of my partners have helped with training as well, as did the trauma team. Nurses could ask any attending to help if they found something unexpected or if they were struggling with imaging.

What results have you had so far?

Grayden: I don't consider myself an ultrasound expert, more like an amateur enthusiast. In the early days of my training, I could easily spend over an hour trying just to see the heart and identify the structures I was looking at. With months of persistence and coaching, I was able to develop my skills. I now feel confident in my ability to obtain at least a general sense of cardiac function in almost any patient in a time-efficient manner. A few of my examinations have led to new discoveries that changed patient outcomes. In one instance, I was performing an echo on a trauma patient on ECMO when I noticed something I thought was unusual. I showed it to the attending, and a formal echocardiogram was obtained, showing a left atrial clot that was not previously noted. Even though I didn't know exactly what was wrong, I had practiced and looked at enough echo images to identify that something was abnormal and then pass that information on to those who were able to make the right decision.

Michael: We've had a nurse identify pulmonary edema develop as a patient got fluid resuscitated for septic shock. She identified this well before the resident or attending, and it resulted in a change in care. This is exactly the sort of culture change we're hoping this sort of training will foster.

Maggie: We're still in the first year of training, and just about to start training another cohort. We'll be doing some assessments for retention soon. One additional impact of this training is that it's gotten nurses more interested in echocardiography. We've had more nurses express interest in training, and there is greater appreciation of what the sonographers are doing at bedside.

> *My hope is that this becomes another skill for the bedside nurse, just like auscultation or EKG interpretation.*
>
> ***–Michael Lanspa, MD, FASE***

What's the future of this program?

Grayden: We're hoping that we can refine this program to train more nurses, eventually reaching the point where nurses are able to train incoming nurses.

Maggie: We still have a long way to go. Another future application would be implementing this in our rapid response and code teams. Nurses are usually the first on the scene in hospital emergencies. Being able to quickly assess cardiac function would be invaluable, where a nurse could provide the physicians the information they need without the distraction of the physician performing the ultrasound while simultaneously running a code.

Michael: My hope is that this becomes another skill for the bedside nurse, just like auscultation or EKG interpretation. I've seen POCUS and Critical Care Echocardiography improve care and the quality of consultations. I'm hoping we see the same impact as nurses adopt this skillset, with educational resources and guidance from expert societies like ASE.

The Evolving use of Intracardiac Echocardiography in Left Atrial Appendage Occlusion and

Structural Heart Disease Interventions

*Contributed by **Omar Khalique, MD, FASE**, St. Francis Hospital and Catholic Health, Roslyn, NY*

Structural Heart Disease Intervention (SHDI) is one of the fastest growing medical fields. This discipline is highly predicated upon preprocedural and intraprocedural imaging.

STRUCTURAL HEART Disease Intervention (SHDI) is one of the fastest growing medical fields. This discipline is highly predicated upon preprocedural and intraprocedural imaging. The latter has mostly been limited to transesophageal (TEE) imaging in the past. However, intracardiac echocardiography (ICE) technology has rapidly accelerated and is gaining steam. Potential advantages include less patient sedation, faster workflows, and less recovery time.

ICE has gained particular traction in left atrial appendage occlusion (LAAO) procedures. The recent SCAI/HRS LAAO consensus document strongly recommends intraprocedural imaging with TEE or ICE.[1] Pure ICE guidance for LAAO should be reserved for experienced centers at this point in time. Less experienced centers planning to transition to ICE are recommended to do so in a stepwise approach starting with both TEE and ICE to build experience and comfort level.

While 3D ICE technology is expanding, 3D TEE is still the gold standard method for guidance given its higher resolution, familiarity, and reproducibility. 2D modalities, whether TEE or ICE, are inadequate for SHDI guidance. Recent data from Alkhouli et al[2] show that

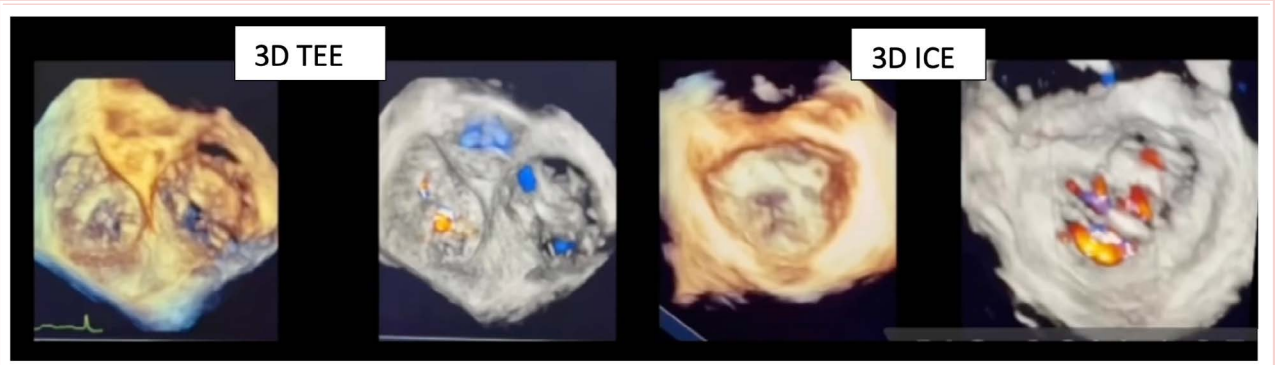


FIGURE 1: 3D TEE and 3D ICE images from the same patient s/p mitral and tricuspid edge-to-edge repair. Note the higher spatial resolution and anatomical coverage of 3D TEE images. Courtesy of Saint Francis Hospital and Heart Center®, Roslyn, NY

"all leaks matter" for occurrence of stroke, and thus careful assessment of leaks intraprocedurally has become more critical than ever before. This requires viewing color Doppler along the entire circumference of the device, and suggests that we need views beyond the four traditional TEE angles. Although 3D color Doppler has a lower frame rate, the wider view can help to localize leaks which can then be measured more precisely on higher resolution 2D color Doppler imaging.

It is important recognize the current state of technologies. ICE certainly facilitates a minimalistic approach which may have certain advantages as mentioned above. While 3D ICE technology is improving, the technology is still not equivalent to 3D TEE. While 3D TEE probes contain thousands of piezoelectric elements, 3D ICE probes contain only 128-840 elements in various array formations. The practical result of this is significantly increased spatial and temporal resolution for TEE, as well as a larger sector size and thus larger achievable 3D volume size for 3D TEE.

The majority of existing literature on LAAO has been formed in the setting of TEE guidance, and whether the positive outcomes translate to LAAO performed using ICE is currently unknown.

ICE has been used frequently for transcatheter tricuspid valve interventions (TTVI) as an adjunctive therapy, where TEE imaging is far field from the esophagus (posterior) to the tricuspid valve (anterior). 3D and live multi-planar (MPR) imaging are critical to guidance of TTVI, particularly edge-to-edge repair. The evolution of 3D ICE has increased its utility in this setting (**Figure 1**).

While enthusiasm for and use of ICE is increasing, a number of questions remain. Availability of training is expanding but still very limited. Current ICE catheters are costly and single-use only. Offsetting cost is difficult in the current environment, and with outcomes appearing similar thus far is not a clear goal. With some vendors, multiple consoles are needed in the room if both TEE and ICE are required during a case, as not all vendors have single console compatibility. The interventional imaging physician is frequently needed for manipulation and interpretation of 3D reconstructions as this does not fall within an interventional cardiologist or electrophysiologist skillset, but the role of the interventional imaging physician in handling the catheter is unclear and does not currently include reimbursement.

ICE will continue to be developed and will have an increasing role as a tool in the armamentarium of the SHDI and LAAO teams.

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JASE Pediatric

Guidelines Round-Up

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Introduction

THE FIELD OF PEDIATRIC echocardiography is evolving rapidly, driven by advancements in technology, research, and clinical practice. To guide clinicians through this complex and dynamic landscape, ASE has recently published a series of groundbreaking guidelines that set new standards for cardiac imaging in children. To gain deeper insights into the creation and significance of these guidelines, a team from the PCHD steering committee conducted exclusive interviews with four renowned experts who led these efforts.

The field of pediatric echocardiography is evolving rapidly, driven by advancements in technology, research, and clinical practice.

Dr. Jimmy Lu, the lead author of the "Cardiac POCUS in Children" guidelines, shares his journey into the growing field of point-of-care ultrasound and its transformative role in pediatric care. Dr. Leo Lopez discusses his leadership in crafting the "Comprehensive Pediatric TTE" guidelines, which establish a robust framework for transthoracic echocardiography across diverse pediatric populations. Dr. Patrick McNamara highlights the critical importance of "Targeted Neonatal Echo" in neonatal intensive care, reflecting on its precision and life-saving potential. Lastly, Dr. Anita Moon-Grady

elaborates on the development of the "Fetal Echo Guidelines," which are reshaping the field of prenatal diagnostics and bridging th gap between fetal and postnatal care.

Through these interviews, the authors provide a behind-the-scenes look at their personal journeys, the pressing need for these guidelines, and the unique contributions their work brings to the field. They also offer a glimpse into the future, exploring what might lie ahead for the next iterations of these essential documents. This article not only celebrates their expertise but also underscores the transformative impact of these guidelines on the future of pediatric cardiology.

Interviews

Jimmy Lu, MD, FASE - *Cardiac POCUS in Children Guidelines*

Can you tell us a little bit about yourself, your background, and how you came to lead the writing effort on this ASE guideline?

I am the Associate Director of Noninvasive Imaging at the University of Michigan Congenital Heart Center. I had spent some time working with our NICU trying to help them get established in POCUS and was finishing my time in the ASE Leadership Academy. Piers Barker was the chair of the Pediatric and Congenital steering committee at the time. He was generous enough to nominate me to chair this writing committee. I think he was hoping that I could help bring together different viewpoints of the various stakeholders. He made my job easy, though, by helping to select an all-star cast around me.

Why was this the right time for the ASE to publish a guideline paper on this topic?

This is an active area of great interest to multiple subspecialties, and an area that has grown at times faster than guidelines. Some subspecialties (such as intensive care) have published guidelines, but the hope was that an ASE guideline could leverage our expertise in this area and establish some commonalities (indications, equipment, orientation, training, etc.) rather than each subspecialty having to recreate their own recommendations. The aim was to facilitate collaboration in this area.

What does your guidelines paper add that has not been previously represented in ASE guidelines?

The previous ASE guidelines had helped to define cardiac POCUS and involvement of cardiologists in training but had not addressed imaging in children. Our population differs significantly from adults, from the indications (higher suspicion of congenital heart disease) to technical differences (wider spectrum of imaging depths and heart rates across our age range). We emphasized the importance of training and competency specifically in the pediatric population, addressed issues of congenital heart disease and associated limitations (cardiac POCUS is not appropriate to evaluate CHD or signs/symptoms that should suggest CHD, and even evaluation of ventricular function and effusion can be altered in the presence of CHD), specified standard views and orientations, and offered standard recommendations that should apply across subspecialties.

What do you anticipate may be coming down the pipeline in future versions of these guidelines?

Since the publication of our guideline, there have already been guidelines published on Targeted Neonatal Echocardiography, which should be thought of differently than cardiac POCUS, as well as nomenclature in cardiac POCUS. This area will continue to evolve as equipment continues to evolve, including incorporation of AI and imaging by laypersons, and evolving imaging targets. One thing that will not change is the importance of pediatric cardiologists in imaging, and our need to stay involved to ensure that we are providing the best and safest care for our children.

Leo Lopez, MD, FASE - *Comprehensive Pediatric TTE Guidelines*

Can you tell us a little bit about yourself, your background, and how

you came to lead the writing effort on this ASE guideline?

I am currently at Stanford, having recently stepped down as the Echo Lab Director. I have been a prior Chair of the ASE Council on Pediatric and CHD. I was also the Chair of the Writing Committee for Quantification Guidelines during the Performance of a Pediatric Echocardiogram in 2010. This is the main reason that I was appointed to the role of Writing Committee Chair for the recent Guidelines for Performing a Comprehensive TTE.

Why was this the right time for the ASE to publish a guideline paper on this topic?

Advances in knowledge and technology have resulted in changes related to the standard protocol for a pediatric TTE, including the addition of more advanced modalities such 3D echocardiography and strain imaging.

What does your guidelines paper add that has not been previously represented in ASE guidelines?

Aside from dedicated sections discussing 3D echocardiography, strain, and the use of ultrasound enhancing (contrast) agents, the new guidelines also highlight changes in practice as it relates to appropriate use criteria and QI that are different or new compared to the previous pediatric echo guidelines published in 2006 and 2010.

What do you anticipate may be coming down the pipeline in future versions of these guidelines?

There will likely continue to be advances in the use of 3D echocardiography and strain imaging that will result in changes in standard practice. In addition, AI will likely play a bigger role in diagnostic imaging over the next five to ten years.

Patrick McNamara, MD, FASE –
Targeted Neonatal Echo

Can you tell us a little bit about yourself, your background, and how you came to lead the writing effort on this ASE guideline?

I'm a neonatologist with a focus on neonatal hemodynamics, which uses echocardiography to assess cardiovascular health in neonates. After completing an echo research fellowship at SickKids Hospital in Toronto, I helped establish a neonatal hemodynamics clinical program there, based on the 2011 guidelines for Targeted Neonatal Echocardiography (TNE) which eventually grew into a training program. In 2018, I joined the University of Iowa, and in collaboration with Wyman Lai, we established the Neonatal Hemodynamics and TNE Specialty Interest Group at ASE. Due to the growth in the field and number of new programs, and increasing scientific evidence from TNE-based research, we felt it was time for an updated set of guidelines, and I was appointed lead for the writing group.

Our updated guidelines emphasize the specific competencies required by a neonatologist to perform physiologic based evaluations to characterize hemodynamics within neonatal disease states.

Why was this the right time for the ASE to publish a guideline paper on this topic?

The 2011 TNE guidelines laid the groundwork for neonatologists to gain expertise in echocardiography, especially in North America. After over a decade of clinical and research advancements, we saw the need for updated guidelines that would better support global training and make the field more accessible, particularly outside North America. In addition, the need to spend an extended amount of time in a pediatric echo lab made it difficult for training programs to be established in countries with few pediatric echo labs.

What does your guidelines paper add that has not been previously represented in ASE guidelines?

Our updated guidelines emphasize the specific competencies required by a neonatologist to perform physiologic based evaluations to characterize hemodynamics within neonatal disease states, which is essential to better characterize neonatal disease states and enable a more precise approach to treatment. Key improvements include more flexible training requirements, broader indications for screening (e.g., for premature infants), and an emphasis on both imaging and the cognitive skills needed to interpret hemodynamic data. The guidelines also present clear standards for cardiac point-of-care ultrasound (POCUS), ensuring proper training and collaboration without limiting the growth of the field.

What do you anticipate may be coming down the pipeline in future versions of these guidelines?
Over the next five to ten years, I expect significant growth in neonatal hemodynamics programs, especially with the increasing integration between neonatology and pediatric cardiology. This will lead to more clinical sites and training programs. Additionally, AI and advanced imaging technologies, such as tissue Doppler and strain imaging, could become more integrated into routine practice. As the field matures, we may see these tools become standardized, enhancing the accuracy and reliability of neonatal echo assessments.

Anita Moon-Grady, MD, FASE -
Fetal Echo Guidelines

Can you tell us a little bit about yourself, your background, and how you came to lead the writing effort on this ASE guideline?
I am Pediatric Cardiology and Neonatal-Perinatal Medicine trained and have been the Director of the Fetal Cardiovascular Program at UCSF for the last 16 years. In my professional career I have been involved at a national level in developing guidelines for training and accreditation in fetal echocardiography and worked with an amazing group developing the AHA Guidelines document published in 2014. I also was involved in updating

I think we will see better/more well-supported and data-driven recommendations and earlier echocardiography recommended as imaging platforms improve.

cardiac screening guidelines for ISUOG. I was approached by a colleague (Mary Donofrio) with the idea to re-vamp the ASE Guideline; having been involved previously with the Pediatric/Congenital Council as ASE, I thought this would be a great idea (beware anyone who presents writing guidelines as a "great idea," BTW).

Why was this the right time for the ASE to publish a guideline paper on this topic?
Several other organizations have been hard at work updating their fetal echocardiography and fetal cardiac screening guidelines; it had been nearly two decades since ASE's most recent statement! In the intervening years fetal echo has become ubiquitous, advanced imaging fellowships common, and the AHA published a comprehensive statement on Fetal Cardiology as a stand-alone Guideline.

What does your guidelines paper add that has not been previously represented in ASE guidelines?
We updated the approach to recommended image planes to harmonize with other guidelines from the Obstetric and Radiology literature. We also expanded the examination recommendations to include not just normal anatomy but also abnormal anatomy (this is a first in the fetal guidelines space).

What do you anticipate may be coming down the pipeline in future versions of these guidelines?
There is always possible refinement and addition of new recommendations using new modalities as they are validated. I think we will see better/more well-supported and data-driven recommendations and earlier echocardiography recommended as imaging platforms improve. We may see additional required measurements in future revisions.

TIPS & TRICKS

"Make every detail perfect and limit the number of details to perfect."
– Jack Dorsey

As congenital cardiac imagers we appreciate the value of sharing tips and tricks amongst colleagues at our institutions. Considering this, the Pediatric & Congenital Heart Disease Council believes that our section of the Echo magazine may be a great avenue to share our tricks of the congenital cardiac imaging trade with colleagues across the globe. In this article we will focus on clues to coronary artery imaging.

CLUES TO CORONARY ARTERY IMAGING

TECHNICAL TIPS

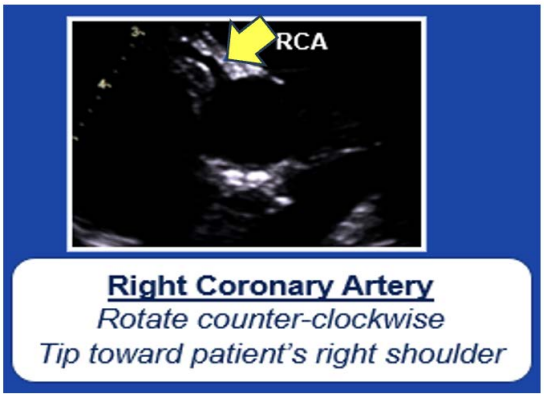
Begin with patient in steep left lateral position

2D Optimization:

- Use higher frequency probe when practical and available (minus harmonics in infants/toddlers)
- Dynamic range or Compression ~ 45

Color Doppler Optimization:

- Decrease color Doppler scale (Nyquist limit 20-40cm/sec)
- Increase Color frequency (flow opt) to ~5mHz or to highest for that probe.
- Increase persistence if infant tachycardic



IMAGING TIPS

Parasternal Short Axis

**Must visualize connection to aorta by 2D & Color Flow Doppler*

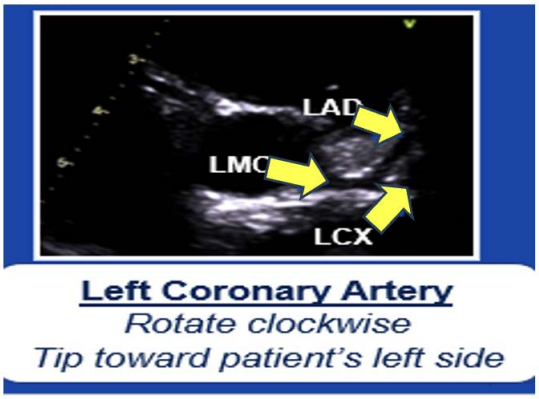
Right Coronary imaging tips

- Slightly higher than level of aortic valve enface.
- Rotate counter- clockwise
- Tip toward patients' right shoulder
- May supplement with parasternal long axis visual RCA for high take-off RCA

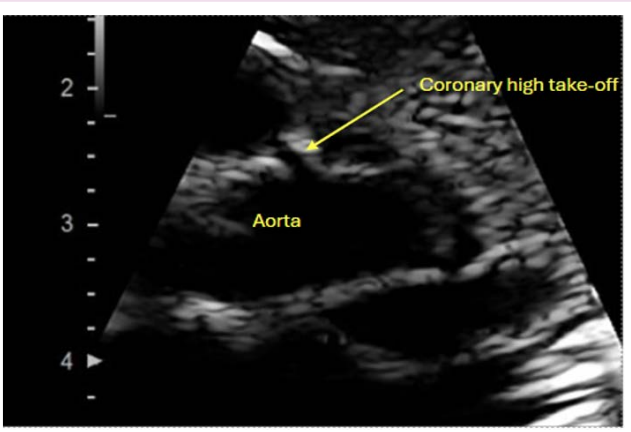
Left coronary imaging tips

- Rotate clockwise
- Tip probe toward patients left side

** Must image LCA to the bifurcation*



TIPS & TRICKS

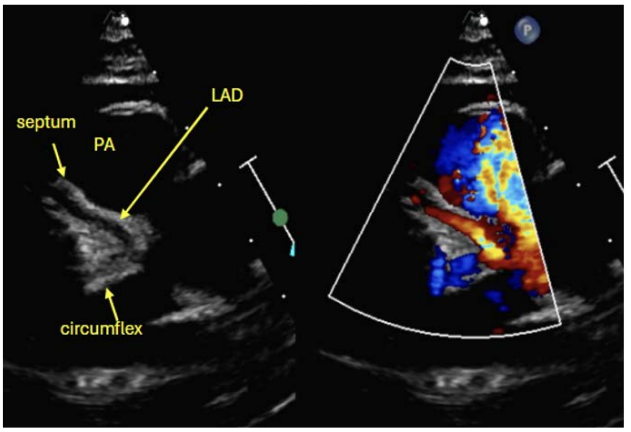


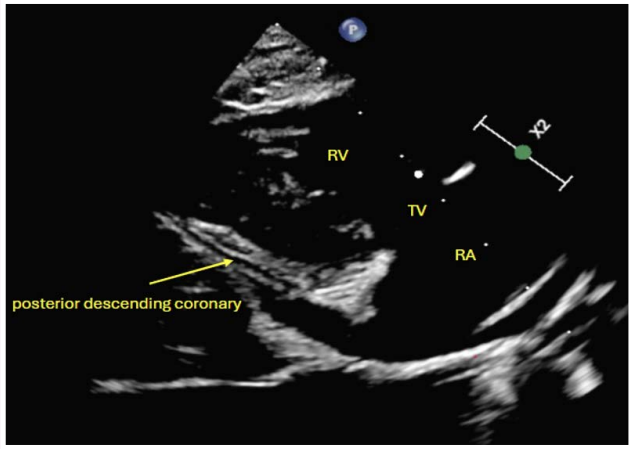
High take- off imaging tips

- Recumbent position
- Start by left clavicle, knotch between 12 & 3
- Slide down until coronaries are in view
- May need to rotate clockwise for LCA

Parasternal Long Axis

- Tilting towards pulmonary artery can see the left main, circumflex, and left anterior descending proximally and distally along septum when tilting to pulmonary artery.

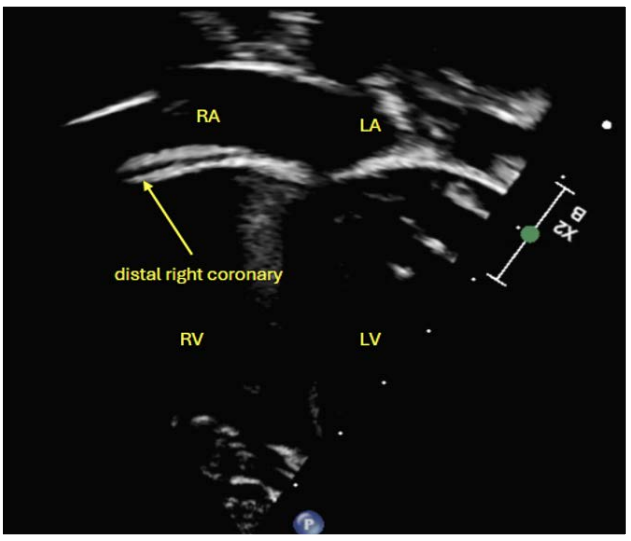




- Tilting towards tricuspid valve can see the posterior descending coronary artery

Apical 4-chamber

- Tilting posteriorly towards coronary sinus can see the distal right coronary artery along the right atrioventricular groove



Must Practice Practice Practice!!!

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Continuous Improvement in Echocardiography Services:

Principles, Practices, and Case Study

*Contributed by **Yasdet Maldonado, MD, FASE**, Cleveland Clinic, Weston, FL*

In an echocardiography service, continuous improvement can lead to better patient outcomes, enhanced diagnostic accuracy, and more efficient use of resources.

CONTINUOUS IMPROVEMENT is a vital aspect of modern healthcare, ensuring that services are constantly evolving to meet the highest standards of quality and efficiency. In an echocardiography service, continuous improvement can lead to better patient outcomes, enhanced diagnostic accuracy, and more efficient use of resources. This article will explore the principles and practices of continuous improvement in an echocardiography service, drawing on examples from the Cleveland Clinic and other leading institutions.

Introduction to Continuous Improvement

Continuous improvement is a systematic, ongoing effort to enhance products, services, or processes. In healthcare, it involves regularly assessing and improving clinical practices to ensure optimal patient care. The Cleveland Clinic defines continuous improvement as changing the approach to work by providing caregivers with a mindset and tools to enhance quality and reduce costs. This mindset is based on four systems (***Figure 1***)—organizational alignment, visual management, problem solving, and standardization. This approach fosters a culture where every caregiver is capable, empowered, and expected to make improvements daily, regardless of their position.

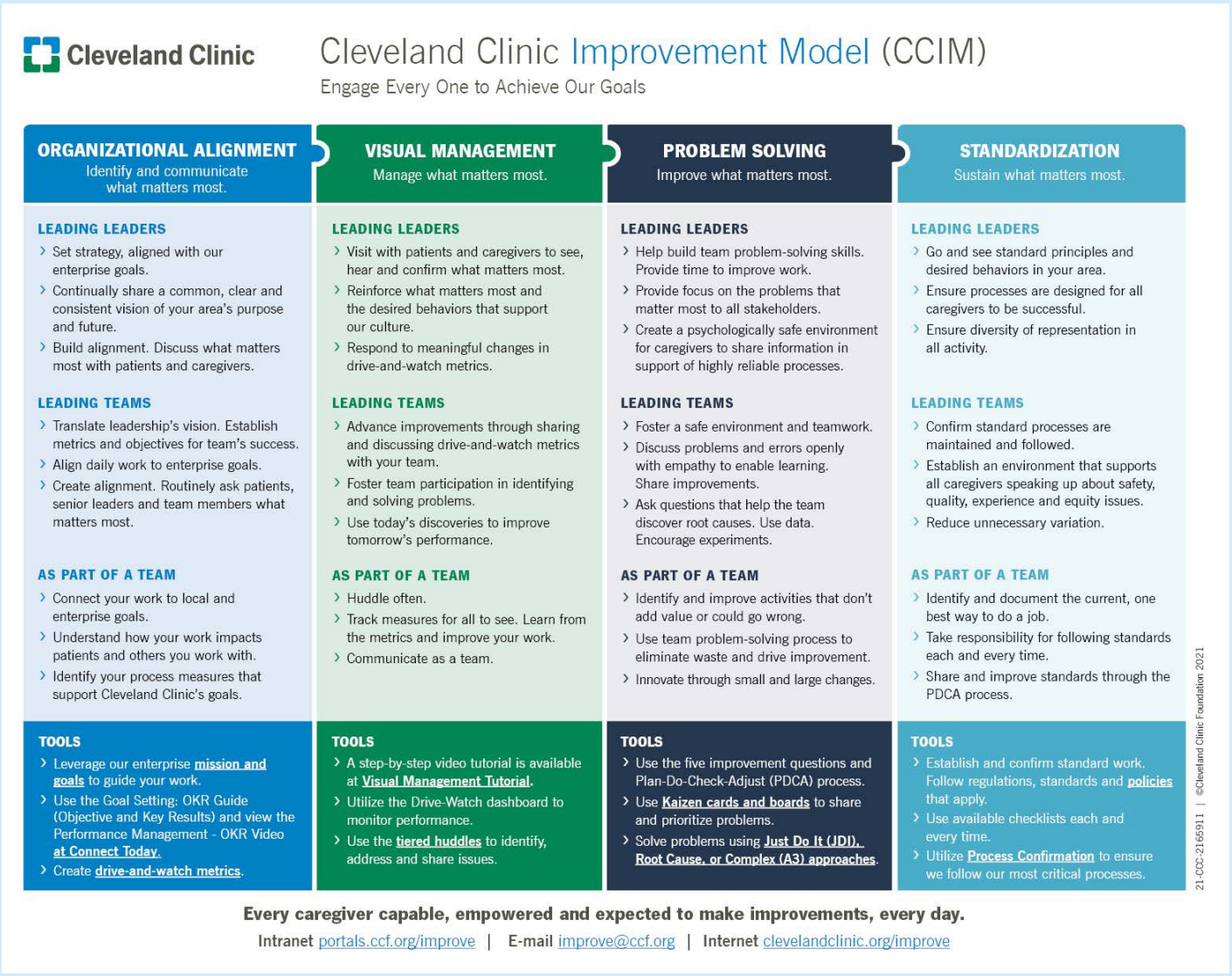


FIGURE 1 The Cleveland Clinic Improvement Model

The Importance of Continuous Improvement in Echocardiography

Continuous improvement in echocardiography services ensures that images are of the highest quality, leading to accurate diagnoses and effective treatment plans. The Echocardiography Quality Framework (EQF), supported by the British Society of Echocardiography, is an example of a comprehensive, patient-centered approach to quality assurance and continuous service improvement.[1] The EQF combines quality assurance and continuous service improvement, encompassing measures of the quality of echocardiography, reproducibility and consistency, education and training, and customer feedback (consulting services).

Key Components of Continuous Improvement in Echocardiography

1. **Quality Assurance and Control:** Ensuring the quality of echocardiographic images is paramount. This involves regular calibration of equipment, adherence to standardized protocols, and continuous training for technicians and physicians. The American Society of Echocardiography (ASE) and the Society of Cardiovascular Anesthesiologists (SCA) have established guidelines for continuous quality improvement in perioperative echocardiography.[2] These guidelines emphasize the importance of comprehensive data acquisition and accurate interpretation to prevent underuse, overuse, or misuse of echocardiography.

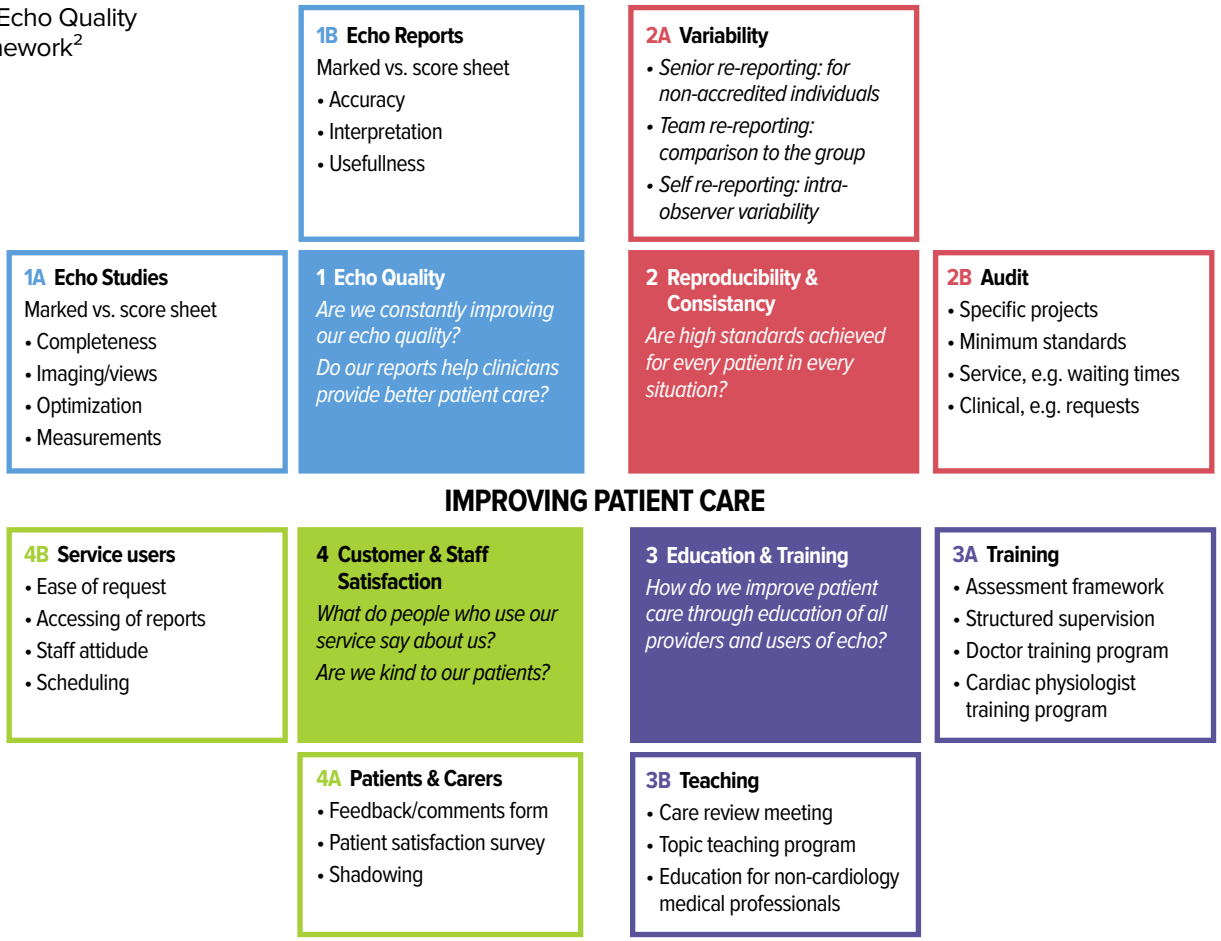
2. **Reproducibility and Consistency:** Achieving consistent results across different operators and machines is crucial. This can be accomplished through standardized procedures and regular inter-operator comparisons. The importance of reproducibility and consistency in echocardiography services is paramount.
3. **Education and Training:** Continuous education and training are essential for maintaining high standards in echocardiography. This includes regular workshops, certification programs, and staying updated with the latest advancements in the field.
4. **Customer Feedback:** Feedback from service users is a valuable resource for identifying areas of improvement. Regular surveys and feedback mechanisms can help echocardiography services understand stakeholder needs and expectations, leading to targeted improvements.

Implementing Continuous Improvement in Echocardiography

Implementing continuous improvement in an echocardiography service involves several steps:

1. **Assessment and Planning:** The first step is to assess the current state of the service and identify areas for improvement. This involves collecting data on various aspects of the service, such as image quality and diagnostic accuracy. Based on this assessment, a detailed improvement plan can be developed.
2. **Engaging Stakeholders:** Successful continuous improvement requires the involvement of all stakeholders, including physicians, technicians, administrative staff, and patients. Regular meetings and workshops can help engage stakeholders and ensure that everyone is aligned with the improvement goals.
3. **Implementing Changes:** Once the improvement

FIGURE 2
The Echo Quality Framework[2]



plan is in place, the next step is to implement the changes. This may involve updating equipment, revising protocols, or providing additional training to staff.

4. **Monitoring and Evaluation:** Continuous improvement is an ongoing process, and it is essential to regularly monitor and evaluate the impact of the changes. This involves collecting data on patient-centric key performance indicators and comparing them to the baseline data. Regular audits and feedback sessions can help identify any issues and ensure that the improvements are sustained.

Case Study: Continuous Improvement at the Cleveland Clinic

The Cleveland Clinic has implemented a robust continuous improvement program across its various departments, including echocardiography. The Continuous Improvement Department at the Cleveland Clinic supports the enterprise by building capability for all caregivers to solve problems[1]. The department provides various tools and resources, such as the Cleveland Clinic Improvement Model, Kaizen Cards, and Standard Work templates, to support continuous improvement efforts.

Two examples of continuous improvement in echocardiography at the Cleveland Clinic are implementing quality audits and participating in accreditation by the Intersocietal Accreditation Commission (IAC).[3] The IAC is a nonprofit organization that accredits imaging facilities and hospitals specific to echocardiography and other imaging modalities. Accreditation by the IAC involves a thorough review of the facility's operational and technical components by expert evaluators, ensuring adherence to best practices and standards in echocardiography. Achieving IAC accreditation signifies a commitment to quality and continuous improvement, as facilities must undergo periodic reaccreditation to maintain their status.

Conclusion

Continuous improvement is essential for maintaining high standards in echocardiography services. By regularly assessing and improving clinical practices, echocardiography services can ensure optimal patient care, enhance diagnostic accuracy, and make efficient use of resources.

An integral part of continuous improvement involves fostering a culture of ongoing learning and adaptation. This requires commitment from all levels of the organization. By creating an environment where feedback is actively sought and valued, echocardiography services can identify potential areas of development and implement timely and effective solutions.

Additionally, leveraging technological advancements plays a crucial role in the continuous improvement process. The integration of advanced imaging technologies, data analytics, and artificial intelligence can significantly enhance the accuracy of diagnostics and the efficiency of services. It is vital that echocardiography services stay abreast of these innovations and incorporate them into their practice to remain competitive and provide the highest level of care.

Moreover, collaboration and knowledge sharing between institutions can amplify the benefits of continuous improvement. By participating in professional networks, conferences, and research collaborations, echocardiography services can learn from the experiences of others, adopt best practices, and contribute to the collective advancement of the field.

Finally, continuous improvement is not solely about addressing deficiencies but also about recognizing and building on strengths. Celebrating successes and acknowledging the contributions of team members fosters a positive work environment and motivates caregivers to strive for excellence.

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3. https://intersocietal.org/

Remembering

James N. Kirkpatrick, MD, FASE

Dr. Kirkpatrick reviewing an echo during an ASE Foundation medical outreach event in Sapa, Vietnam.

A dedicated ASE and ASE Foundation champion, James Kirkpatrick, MD, FASE, University of Washington Medical Center (UWMC), passed away unexpectedly on January 1, 2025. Dr. Kirkpatrick was a highly respected colleague, mentor, and friend to all who knew him.

Dr. Kirkpatrick graduated from Pomona College and received his MD from Loma Linda University. He completed his internship and residency at Yale in internal medicine and clinical medical ethics and cardiology fellowships at the University of Chicago. He was one of the few ethics-trained cardiologists in the United States. He served on the cardiovascular and ethics faculty at the University of Pennsylvania, before he joined UWMC cardiology in 2015 as Professor of Medicine, Section Chief of Cardiac Imaging, and the Director of the Echo lab at UWMC. He was also a Professor of Bioethics and Humanities, the Ethics Committee Chair, and an Ethics Consultant at UWMC.

Dr. Kirkpatrick's volunteerism for ASE began in 2009 just three years after joining ASE as a Scientific Sessions Abstract Grader. This was just the beginning of a tremendous volunteer career at ASE that included serving on the ASE Board of Directors 2016-2019 and most recently as the chair of the ASE Foundation Board (2022-2024). He was currently serving as the chair of the Awards Committee and co-chair of Echo Hawaii that took place January 20-23, 2025. He was the chair of the 2023 ASE Scientific Sessions, an advocate for and member of the ImageGuideEcho Registry, a key member in creating the Critical Care Echocardiography Specialty Interest Group that became a Council in 2022, and a member of the JASE Editorial Board (2016-2022).

Dr. Kirkpatrick gave many lectures at ASE Scientific Sessions over the years, including the Richard E. Kerber Ethics/Humanitarian

Dr. Kirkpatrick was the chair of the ASE 2023 Scientific Sessions in National Harbor, MD. He is shown here with Stephen Little, MD, FASE, (right).

The team of volunteers who participated in the Sapa and Hanoi outreach event enjoyed some down time taking part in some local festivities including dancing.

Lecture titled “Ethical Challenges in the Practice of Echocardiography: What is Right and How Do We Do It?” in 2018. He was the chair of the September 2024 ASE Guideline “Recommendations for Cardiac Point-of-Care Ultrasound Nomenclature” and the April 2020 “Recommendations for Echocardiography Laboratories Participating in POCUS and Critical Care Echocardiography Training.” He also served on the writing group of the August 2015 “Echocardiography in the Management of Patients with LVADs,” and chaired two ASE COVID statements (2020 and 2024).

Everyone who knew Dr. Kirkpatrick knew he was passionate about education and global health events in medically underserved areas. He was an integral leader on five ASE Foundation Global Health outreach events in Vietnam, which is the home country of his wife Thanh. His goal was to establish sustainable medical education mechanisms that would yield long-lasting benefits even after the Foundation’s volunteers left.

Dr. Kirkpatrick lead a team of ASE Foundation volunteers to Sapa in Northern Vietnam to host a two-day medical outreach and research event in 2023.

Dr. Kirkpatrick’s dedication to his patients, his peers, and the field of cardiovascular ultrasound will be tremendously missed. Our hearts go out to his wife and his three children, his colleagues at the University of Washington, and his ASE family.

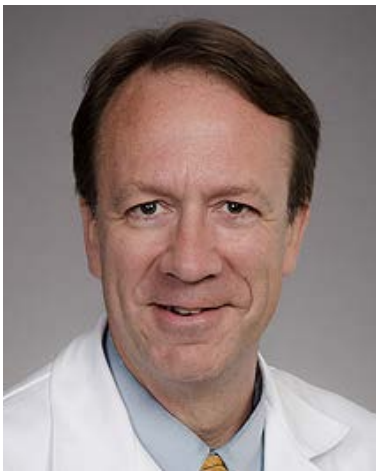
Dr. Kirkpatrick had a great sense of humor and enjoyed life. Here he was having fun with the statues in National Harbor with his Scientific Sessions co-chair Madeline Jankowski.

In Memory of

James N. Kirkpatrick, MD, FASE

*Contributed by **Susan E. Wiegers, MD, FASE, ASE** Past President (2015-2016) representative on the Board of Directors, retired head of the echo lab at the Hospital of the University of Pennsylvania and then Senior Associate Dean of Faculty Affairs at the Lewis Katz Medical School at Temple University*

We in the ASE community, and the echo world at large, were shocked and deeply saddened to hear of Jim Kirkpatrick's unexpected and sudden demise in early January 2025. My March President's Page in JASE is dedicated to Jim's memory and is a heartfelt and personal tribute authored by one of his many fans who knew and respected him.
– Ted Abraham, ASE President



If you were lucky enough to be a friend of Jim Kirkpatrick, and he made it very easy to get on that list, you will know that he would claim to be unworthy to be the subject of a President's Page commemorating his life. He would suggest at least four other topics that were more important, interesting, and worthwhile. He was the humblest person I know, and in my mind, had very little to be humble about.

Many of us have suffered a surprising loss of someone close, and there is always a range of emotions. But when I heard that Jim died suddenly on January 1, 2025, at the age of 54, it felt like the world had stopped. Not "How sad" or "He will be missed" but "NOT JIM!!!" It seemed impossible that this could have happened to one of the nicest guys and best doctors I ever knew. Despite the umpteen tragedies that have occurred since then, I still have a real sense of disbelief. Jim was so important to ASE - having served as Program Chair of the Scientific Sessions, Chair of the ASE Foundation, volunteer in international outreach, and chair of several writing committees. He was appointed to be the co-chair of the POCUS writing group because it was understood that his intellectual humility along with subject matter expertise uniquely qualified him to navigate all the other Society's concerns about that statement. In fact, the POCUS nomenclature statement [1] was the ASE document with the most co-societal endorsements in our history. Jim led us out of the COVID wilderness as chair of the COVID statement [2, 3] writing group, AND helped to organize the first in-person Scientific Sessions after the pandemic. Most of all, we remember him for his importance to so many of us personally. His sincere personal interest in the members of those writing groups and others, and in the people he met at Scientific Sessions and galas, at his work and volunteer positions and international outreach, made him a standout. He was sought out as a lecturer, mentor, teacher, and friend.

Jim leaves so many who are heartbroken.

His beloved family: wife Thanh and three children Katriona, Karston, and Karson (ages 21-14), as well as his church family and his families at the ASE and at the Universities of Washington, Chicago, and Pennsylvania. He was a wonderful father and husband *(and celebrated his family's achievements like the very proud father and husband he was)*. Jim never liked to be the center of praise. After his amazing 2024 pun-filled ASE Foundation gala emcee stint at the podium, I said, "Jim, who knew you were so funny!!" He said, "Oh, you are much funnier than I am." NO, I am not.

Not to sugarcoat it, but Jim was a little bit of a nut. I hired him for his first faculty job at the University of Pennsylvania after he completed his fellowship in Roberto Lang's lab at the University of Chicago. Six months into his tenure, we met for review. I told him I was really impressed by his performance. He asked for areas of improvement. I said, "Your emails are way too long. If you need Thursday off, put it in the subject line or first sentence. I don't read all the way to the end of your four-paragraph emails." Jim was shocked. Thereafter, every email, note, or manuscript I ever received from him began, "Dear Susan, I know shorter is better, but....." I managed to change the first line but not his presentation.

There are many of us who can say that Jim made us better people. I certainly can. When I would get angry in the echo lab, Jim would say "Well, perhaps they see the issue this way." He would come up with four possible reasons the person in question had done what they did. The worst thing I ever heard him say was that someone had made an "unfortunate" choice. He gave me, and all of us, pause. One of our former fellows reached out to say that he knew that Jim was going to heaven because he never complained about Wilco being played incessantly in the lab by another attending. Jim was trained as an ethicist, but I always thought that was superfluous. He was so honest, ethical, and clearheaded – master's degree not required. Two days before Jim died, he emailed me to ask if my grandson, who had been recently hospitalized, was OK (he was). I have heard from other people whom Jim checked up on at the end of December, even though he was on call for the whole week. I plan to take a moment on most days to acknowledge what Jim meant to me and to try a little harder to be like him. Please join me.

Dr. Kirkpatrick, who served as the ASE Foundation Board chair 2022-2024, is shown here with his wife Thanh at the 2023 ASE Foundation Research Awards Gala. The theme for the Gala was "All the Colors of the World," and attendees were encourages to wear colors that represented their heritage and culture.

This text also appears as the President's Message in the March issue of JASE (OnlineJASE.com).

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Remembrance of James N. Kirkpatrick

Contributed by the Critical Care Echocardiography Council

Dr. James Kirkpatrick, known to many as Jim, was an extraordinary blend of brilliance, compassion, and authenticity. His sudden departure on January 1, at just 54, has left an irreplaceable void in the hearts of his family, friends, patients, and colleagues. Jim wasn't just a renowned cardiologist and ethicist; he was a humanist whose impact extended far beyond medicine.

Jim's path was shaped by a lifelong curiosity and a deep commitment to making the world a better place. From his early days at Loma Linda University, where he earned his medical degree, to his rigorous training at Yale and the University of Chicago, he brought a spark of passion and determination to everything he pursued. He didn't just excel—he redefined what it meant to be a doctor by seamlessly merging cutting-edge science with heartfelt care.

When Jim joined the University of Washington in 2015, he brought not only his expertise but also an unparalleled dedication to building connections. As the section chief of cardiac imaging and director of the echocardiography laboratory at UW Medical Center, he turned a busy lab into a place where innovation met humanity. Whether leading the team in performing over 12,000 studies annually or offering space to pause and connect with tea and cookies, Jim always prioritized the people around him. His leadership wasn't about recognition or accolades—it was about uplifting others and improving lives.

Beyond the walls of the hospital, Jim's passion for equity drove his work in resource-limited settings, using echocardiography to reach those who often go unseen in the healthcare system. His co-founding of the Multidisciplinary Thoracic Aortic Program in 2023 exemplified his vision for compassionate, patient-centered care. Patients trusted him not only for his expertise but for the way he truly listened, made them feel seen, and treated them with profound respect.

Jim's heart was as big as his intellect. His rare dual expertise as a clinician and ethicist gave him a unique perspective, allowing him to explore the deeply human questions at the intersection of technology and care. He didn't shy away from complexity—instead, he embraced it, helping guide countless conversations around cardiac assist devices, palliative care, and the essence of dignity in medicine. For Jim, ethics wasn't an academic exercise; it was a reflection of his unwavering belief that every person deserves kindness and respect.

As an educator, Jim was a force of nature. He didn't just teach—he inspired. His lectures and mentorship sessions were infused with warmth, humor, and a deep understanding of the human experience. Through his roles as director of the UW Cardiology Advanced Imaging Fellowship and host of the "Coffee and Cardiology" podcast, he created a ripple effect, shaping the future of medicine by nurturing curious and compassionate minds. For those who knew him personally, Jim was so much more than his professional achievements.

While he carried his family's legacy of medicine with pride, a legacy that started with his grandfather, Neal, who practiced for almost 60 years and passed on to his father Richard, an internist still in practice, and his siblings Scott, Christie, and David, he was also a lover of life—quick to laugh, endlessly curious, and deeply thoughtful. His optimism wasn't performative; it was a genuine belief in the good of people and the power of community.

Jim's indelible mark on us all stemmed from his boundless generosity and love. His absence is a profound loss, but his spirit endures in the lives he touched, the ideas he championed, and the countless moments of joy and care he shared with those around him. He reminded us all of what it means to live fully, to give deeply, and to leave the world brighter than we found it.

Jim, you were a light in this world. Your light will continue to guide and inspire us to be better doctors, colleagues, and human beings. You will be profoundly missed but never forgotten. May your memory be a blessing to all who had the privilege of knowing you.

The University of Washington Heart Institute hosted the inaugural "Cardiac Sonographer Career Night" on May 22, 2024. The event was a collaboration between multiple echo labs, industry, and echo education programs with the purpose of kickstarting early-career echo students and celebrating all sonographer career pathways. Jim Kirkpatrick (pictured back row, third from left) was a champion of sonographer education and professional development, and has influenced the careers of many sonographers both within UW Heart Institute and nationwide.

HIGHLIGHTS
from the New Guidelines for Performing Ultrasound Guided Vascular Cannulation: Recommendations of the American Society of Echocardiography

Vascular cannulation is an essential skill across specialties, including anesthesiology, critical care, interventional cardiology and radiology, and cardiac, vascular, and thoracic surgery. Clinical applications range from routine intravenous access and arterial monitoring to instituting emergent, life-saving peripheral extracorporeal membrane oxygenation (ECMO). While these interventions are common, they may carry significant risks with the potential for incurring life-threatening complications. A growing focus on minimally invasive percutaneous therapeutic techniques often requires the insertion of large bore vascular cannulae. Thus, the need for safe and standardized cannulation techniques becomes even more essential. Fortunately, ultrasound (US)-guided vascular access has become commonplace, replacing the landmark approach, increasing cannulation success rates and reducing complications. Though US-guidance is not the standard of care for all vascular cannulation, practice guidelines are emerging for clinicians wishing to implement evidence-based techniques to minimize risks and improve technical competencies.

In the February 2025 issue of JASE, Vegas et al.[1] publish new comprehensive ASE guidelines for performing US-guided vascular cannulation, updating and replacing the 2011 ASE guidelines by Torianos et al.[2] This update uses the Grading of Recommendations Assessment Development and Evaluation (GRADE) system to make recommendations for US-guided access of central and peripheral veins and arteries in adult and pediatric patients ***(Table 6 from the guideline)***. These recommendations are based on expert opinion and a review of original research studies relevant to US-guided vascular access published in peer-reviewed scientific journals from 1990 to 2023. The intent of this document is to highlight appropriate evidence while also providing expert consensus from clinicians with diverse backgrounds.

The guideline emphasizes the fundamental roles of US during vascular access, including 1) pre-cannulation vessel assessment, 2) dynamic US guidance during cannulation, and 3) identification of local complications.

Contributed by
***Marcus Salvatori, MD**, and*
***Annette Vegas, MD, FASE**,*
Toronto General Hospital, Toronto, Canada

This document discusses the general aspects of regional vessel anatomy, anatomic variations, US imaging of vessels, US-guided and landmark vascular cannulation techniques for central and peripheral vessels. Descriptions, diagrams and ultrasound images highlight vessel anatomy and nearby structures at risk of injury during vessel cannulation ***(Figure 13 from the guideline)***. US-guided cannulation reduces complications but does not eliminate them completely. The guideline also discusses the role of US in identifying major complications of vascular cannulation, including injury to local vessels (such as hematoma, dissection and thrombosis) and surrounding structures (pneumothorax, nerve injury). A section on pediatric vascular access emphasizes the differences in anatomy and technique adaptations required for this specialized patient population.

These guidelines present studies and meta-analyses relevant to each of the major veins and arteries in support of evidence-based recommendations. Although there is an increasing body of literature related to US guided vascular access, the quality of the evidence to date

Table 6 is from Guidelines for Performing Ultrasound-guided Vascular Cannulation, published in the February 2025 issue of the Journal of the American Society of Echocardiography. Reprinted with permission from Elsevier Inc.

TABLE 6 Summary of recommendations and benefits for US-guided vascular access in adults and pediatric patients

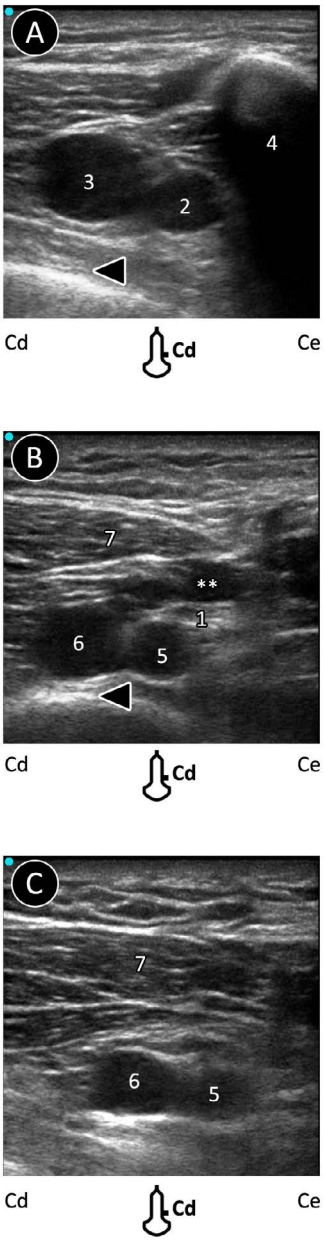
Location	Grade of recommendation	Increase overall success	Increase first success	Reduce time to cannulation	Reduce Complications
Adults					
Internal Jugular vein	1A	+	+	+	+
Subclavian vein	1C	+	+	+	+
Axillary vein	1B	+	–	–	+
Femoral vein	1B	+	+	+	+
PICC	1C	Ø	Ø	Ø	Ø
Peripheral vein	1B	+	+	+	+
Radial artery	1B or 1A	+	+	+	+
Brachial artery	1C	+	Ø	Ø	Ø
Axillary artery	1C	+	+	Ø	Ø
Femoral artery	1B	+	+	+	+
Posterior Tibial artery	1C	+	–	+	Ø
Dorsalis Pedis artery	2C	+	–	–	Ø
Pediatrics[†]					
Internal Jugular vein	1A	+	–	–	+
Femoral vein	1C	+	–	Ø	Ø
Peripheral vein	2B	+	+	+	Ø
Radial artery	1B	+	+	+	+
Femoral artery	1B	+	+	+	+

PICC, peripheral intravenous central cannulation.

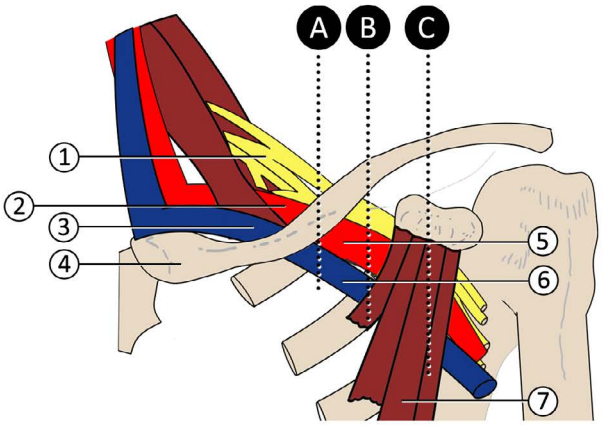
+, Supported by randomized control trials and studies; –, not supported by randomized control trials and studies; Ø, no evidence from randomized control trials and studies.

* (Grade 1B) routinely or (GRADE 1A) for a weak pulse and small artery or failed landmark attempt.

† There is a wide spectrum of recommendations for the pediatric age group, such that one recommendation may be stronger for neonates and young children and less so for the older child.



Left subclavian and axillary vessels



1. Brachial plexus
2. Subclavian artery
3. Subclavian vein
4. Clavicle
5. Axillary artery
6. Axillary vein
7. Pectoral muscle

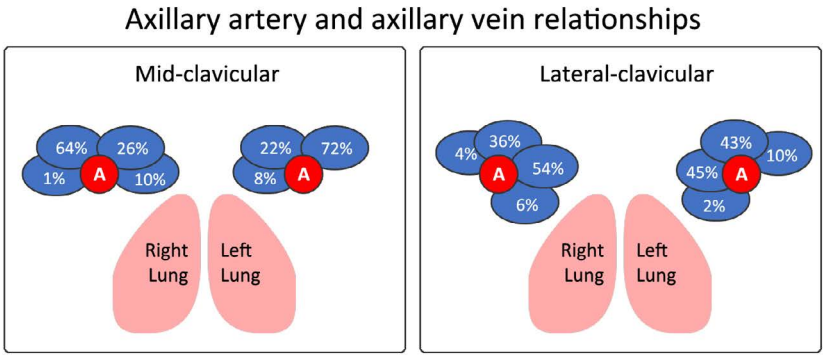


FIGURE 13

Subclavian and axillary veins. The diagram shows the anatomy of the left subclavian and axillary vessels. (A-C) The US images represent sagittal probe placement, probe marker caudad, at (A) mid, (B) lateral, and (C) far lateral positions of the clavicle showing the left axillary vessels and surrounding structures in SAX. The axillary vein appears smaller and is in a more medial position, further laterally along the clavicle. The graphic shows the position (in percentage) of the axillary vein relative to the axillary artery at the (B) mid and (C) lateral clavicular levels (Source: Lavallee et al.37). The asterisks in (B) represent the cephalic vein entering the axillary vein. The arrow in (A and B) represents the pleural line. Cd, caudad; Ce, cephalad; SAX, short-axis; US, ultrasound. See Video 7. (This graphic is from Guidelines for Performing Ultrasound-guided Vascular Cannulation published in the February 2025 issue of the Journal of the American Society of Echocardiography. Reprinted with permission from Elsevier Inc.)

remains weak. Except for the internal jugular vein, there remains a lack of strong evidence from randomized trials for most aspects of vascular access in adults and children. A gap remains between the existing evidence and guidelines for using US in clinical practice. The availability of US equipment, clinical expertise and resident training will more likely influence the role of US-guided vascular access as a standard of care than will future research studies.

Besides these descriptive sections, tables, figures and diagrams illustrate essential information, including:

- **Ultrasound roles during vascular access**
- **Common indications for arterial access**
- **Vessel size in pediatric patients by vessel and age**
- **Recommended training objectives**
- **Summary of recommendations and benefits for US-guided vascular access**

Finally, training requirements and standards reinforce the objectives and competencies required for this essential skill. Training in US-guided vascular cannulation should include three components: 1) knowledge acquired through review of didactic and web-based material, 2) simulation training using models, and 3) supervised practice with clinical experts. Moving forward, the challenge will be how best to integrate these training components into clinical competency for US-guided canulation. In this context, these recommendations can serve as both a learning tool for novices and a reference guide for experienced practitioners.

In summary, the updated ASE guidelines provide a valuable resource for healthcare professionals looking to improve their skills in US-guided vascular cannulation. By consolidating recent research and highlighting essential techniques, these guidelines should help both new and experienced clinicians deliver safer, more effective care. Adopting these recommendations will ultimately lead to better outcomes and greater confidence amongst clinicians.

By consolidating recent research and highlighting essential techniques, these guidelines should help both new and experienced clinicians deliver safer, more effective care.

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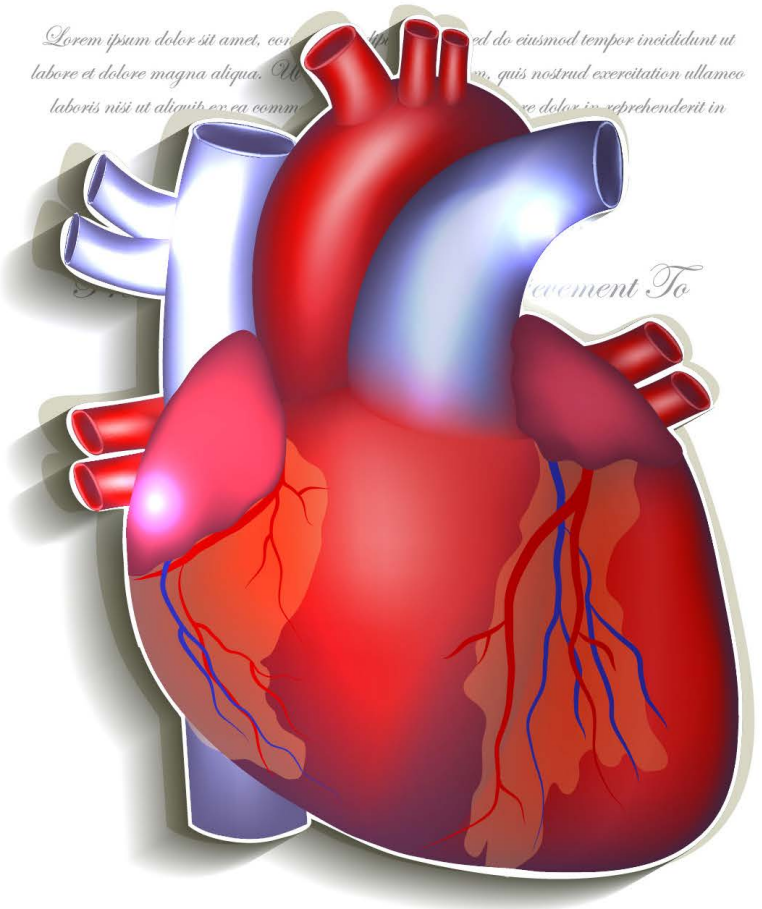
HCM

HYPERTROPHIC CARDIOMYOPATHY

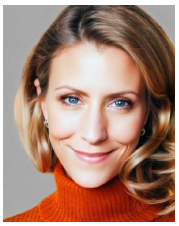
CERTIFICATE OF COMPLETION



ASE Pilots Hypertrophic Cardiomyopathy Certificate of Completion Program at the ASE 2024 Scientific Sessions

Hypertrophic cardiomyopathy (HCM) affects about 1 in 500 people worldwide, which means that around 0.2% of the population—or approximately 1.5 million individuals in the United States. Most patients (85+%) remain undiagnosed due to HCM asymptomatic presentation, nonspecific symptoms or be mistaken for other cardiovascular conditions such as cardiac amyloid, hypertensive heart disease or Fabry's disease. HCM phenotypes include apical, reverse curvature, sigmoidal and neutral variations and require distinct imaging techniques and knowledge for accurate assessment. Echocardiography plays a crucial role in detecting HCM. For sonographers, accurately identifying HCM through echocardiography is particularly challenging due to the nuance of septal measurements, non-standardized provocation methods and differentiating complex Doppler profiles. The existing knowledge gap for HCM recognition presents a unique opportunity as HCM is a contemporary treatable disease once identified.

As part of the 2024 ASE Scientific Sessions, Bristol Myers Squibb sponsored a two-part certificate of completion program consisting of an asynchronous web-based learning module and an experiential session specifically focused on enhancing technical scanning skills in evaluating HCM. The participants were asked to complete the ASE HCM micro-lessons and a pre-session test prior to the event. During the in-person session, the participants received hands-on training from echocardiography experts using models, actual patients with HCM and a simulator. The learning objectives focused on correctly measuring the interventricular septum, identifying the presence of systolic anterior motion (SAM) of the mitral leaflets, and differentiating between left ventricular outflow tract (LVOT) gradients and mitral regurgitation. Post-session evaluations showed significant improvements in participants' confidence and understanding of the learning objectives.



Contributed by ***Cody Frye, BA, ACS, RDCS, FASE****, Sanger Heart and Vascular Institute Atrium Health, Charlotte, NC ;*

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Brad Mehl, MHA, ACS, RDCS, RVT, RDMS, RT(R), FASE*, Oklahoma Heart Hospital, Oklahoma City, OK*

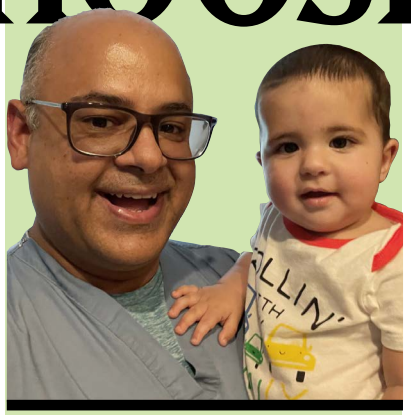
The HCM DIY course underscored the critical role of experiential learning in mastering the complexities of HCM evaluation. For both instructors and participants, the hands-on component proved invaluable in translating knowledge into practical skill. Cases like HCM go far beyond what can be learned in textbooks—they require the ability to adjust techniques in the moment, work through anatomical variations, and address challenges unique to each patient. Having the opportunity to work directly with actual obstructive HCM patients allowed participants to experience these complexities firsthand, building their skills and confidence with guidance from national HCM sonographer experts.

Attendee Jackie Helm, a sonographer educator at Piedmont Hospital in Atlanta, GA described the pre-course ASE HCM microlesson content as "well-produced videos... in small, easily digestible chunks," praising its ability to cater to both novice and experienced sonographers. Another participant, Allison Droddy of The Texas Heart Institute for Cardiovascular Care Center in Houston, TX noted, "The hands-on portion gave real-world scanning of actual oHCM patients with coaching from national HCM experts," emphasizing the value of expert guidance and practical application. Allison also shared, "The online learning portion combined with the hands-on session was the perfect fusion of knowledge and skill." This course underscored the irreplaceable value of hands-on learning in fostering a deeper understanding of HCM and equipping sonographers with practical tools to enhance patient care. As we continue to make progress in our ability to deliver high quality education through learning labs, workshops, simulators, posters and microlesson content, the question remains: How do we scale these intimate learning scenarios to reach the most sonographers and in turn, help the most patients? Symptoms of HCM are debilitating and undiagnosed, life-threatening. Patients with obstructive HCM often struggle for years to be properly diagnosed, thankfully HCM is more medically manageable than it ever has been. There has never been a better time to diagnose, manage and provide follow up for patients with HCM. Echo is the mainstay for diagnosis and follow up of those with suspected or known HCM, so it is imperative that sonographers are well educated and skilled in HCM imaging. Where do we go from here?

ASE is dedicated to advancing sonographer education by continually developing targeted solutions. Next year, ASE will expand its offerings with regional workshops much like the one presented at the Scientific Sessions.

ASE is dedicated to advancing sonographer education by continually developing targeted solutions. Next year, ASE will expand its offerings with regional workshops much like the one presented at the Scientific Sessions. These workshops will be in cooperation with institutions across the United States and will offer hands-on training with expert sonographers on volunteer HCM patients. In addition, the HCM certificate of completion program will return this year, on Friday and Saturday, during the ASE 2025 Scientific Sessions in Nashville. We hope to see you at one of these great programs. Space is limited, so register today for this exciting opportunity.

FATHER *or* CARDIOLOGIST: *Do I have to* CHOOSE?



Contributed by
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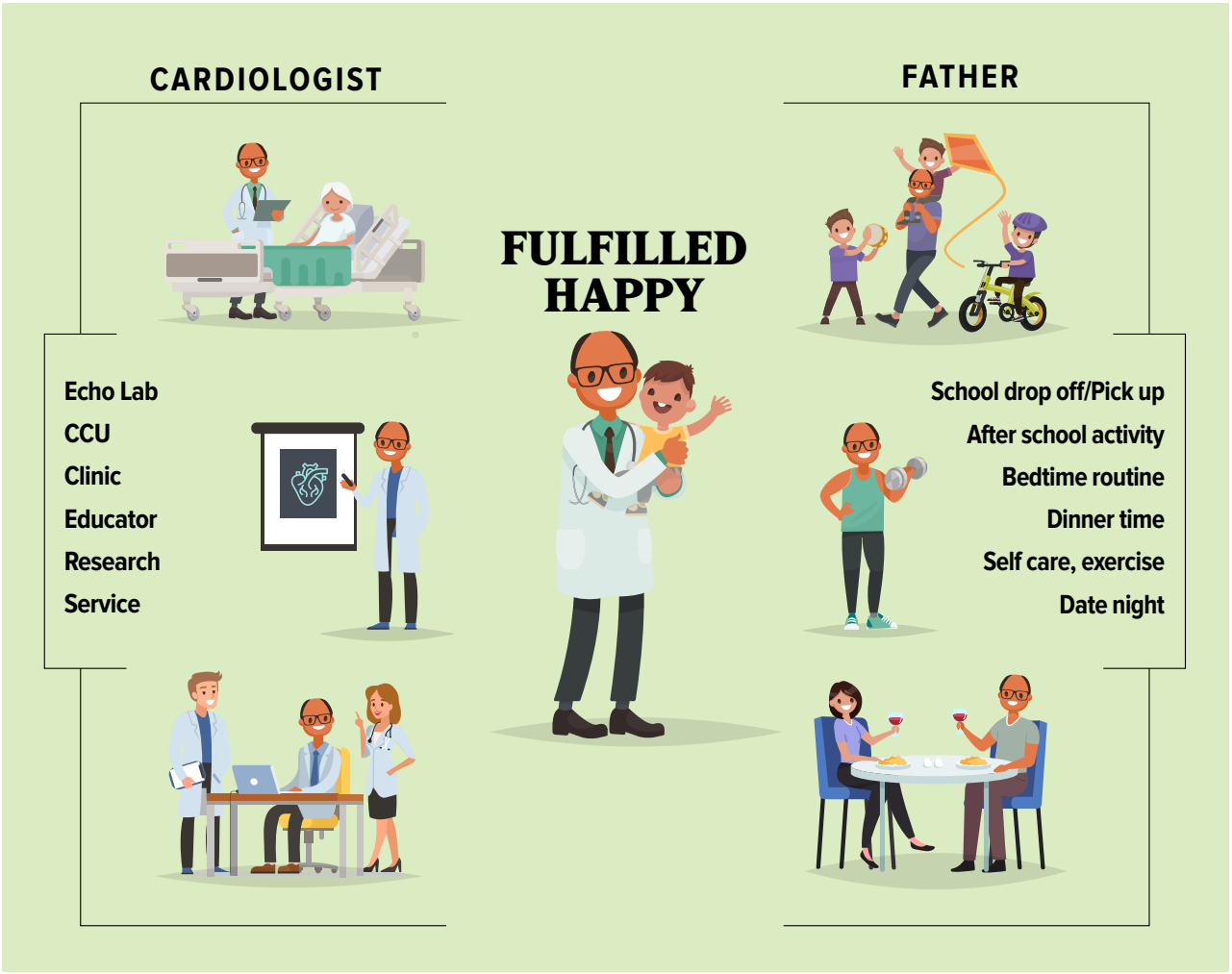
IT was my dream to become a cardiologist one day, and it came to fruition after many years of preparation and training. When the moment finally arrived, I don't recall taking a pause to cherish this moment. The milestone that I was trying to reach seemed very ordinary at this point, and I was already thinking about the next steps as I found myself surrounded by legendary cardiologists who stood as tall as a Sequoia trees. I was inspired by them to dedicate more of myself to this noble profession and strive to be a better clinician, educator, and researcher. I had chosen an academic career and knew that without being a triple threat one does not stand a chance at academic promotion. As I started my faculty career as a newly minted attending, my personal life, which had been in a hibernation mode, demanded more attention. I had intentionally prioritized my career over starting family (kids) since I knew that I had to move frequently and with a physician wife that meant living apart from time to time. After becoming an attending, I finally felt settled and we decided that it was the right time to start our family. We had our first and only child in the middle of COVID pandemic. We were excited about this long-awaited moment and quite unprepared, like most new parents. The first few years of parenthood were a struggle. I was juggling the demands of the new job while fulfilling my responsibilities as a new parent, both of which were a brand-new experience and my fellowship didn't prepare me for either. I found myself drawn to new books on parenting styles rather than the latest ASE guidelines. There was so much knowledge and shared experience out there on how to raise a child, and I had an immense desire to absorb that as quickly as possible so I can help raise my new baby in the best possible way, rather than by trial-and-error method. My interactions with my co-workers were often about my son and not medicine. This was not always easy as a male physician since people around me didn't expect to see me as a new father but rather as an attending cardiologist. Overtime, I learned some important lessons from my son, now four years old, that have helped me become a better parent and physician.



Setting Priorities

Initially I struggled with establishing priorities and setting boundaries between work and parenting demands. I was eager to show up to work early and stay late. I wanted to make sure my superiors and colleagues respected me for my work ethics and professionalism. I was recognized for my efforts and received the outstanding teaching award by the fellows in the first year as faculty. However, deep down I was struggling since my child was demanding more time, and I was not sure how to give him my undivided attention since I was at work most of the day and only came home when he was getting ready for bed. Deep down I was unhappy with my inability to be an ideal father even though I was thriving professionally. It took some self-reflection and making uncomfortable decisions to place my son above all my other obligations. At first, I was not sure if I was making the right decision, but over time I felt more at ease with this decision and saw the bond grow stronger between me and my son. He counted on me to be there

It took some self-reflection and making uncomfortable decisions to place my son above all my other obligations.

for him, and I was able to fulfill that expectation for the most part.

1 Professional career can be fulfilling as a parent.

I was afraid that fulfilling the role as a parent would cost me my academic career since I would not be able to fulfill my clinical and academic obligations and people would soon stop respecting me and opportunities would stop presenting themselves. I was proven wrong since many of my colleagues were dealing with similar issues and understood the complexities of parenting while being a full-time clinician. I felt supported by my superiors and co-workers whenever I needed help with coverage. Opportunities still presented themselves, and I was more selective in choosing those that aligned with my interest without encroaching into my personal time. I also became more efficient with my time and acquired new skills to increase my productivity. This required being mindful of my personal calendar and setting daily, weekly, monthly, and yearly goals which were realistic and setting aside time to accomplish those. I spent more time on self-reflection which allowed me to celebrate my successes while creating a vision for future.

2 Work life balance is my own choice, not my employer's.

When I was doing fellowship the concept of "work life balance" was an abstract one. This foreign concept quickly became a very personal issue of utmost priority with our first child. Every single decision about work ended up involving childcare responsibilities. What seemed like a challenge at first became my favorite "quality time" with my son. I found that the car ride to school or to another activity was truly one of the only times in the day that I was able to connect with him without any disruption. I became more protective of this responsibility and started carving my professional activities around his routine. This meant becoming more creative with my schedule and sometimes working late at night after putting him to bed. Flexibility was important for me, and I was not afraid to be vocal about my needs with my employer without compromising my clinical and academic responsibilities.

I wanted to approach parenting with the same rigorous, evidenced-based approach that I utilize in patient care every day.

3 There is no rain check on early childhood learning.

It took me more than 15 years of training to become a clinical cardiologist. This was barely adequate to learn everything that I needed to take care of a patient, and my learning continued even after I became faculty. On the contrary, there was no preparation or training for becoming a new parent, and I felt inadequate in taking care of my newborn. Questions started popping in my head; how much should I feed, how often, what are the normal milestones, how do I approach potty training, etc.? I wanted to approach parenting with the same rigorous, evidenced-based approach that I utilize in patient care every day. That meant learning new knowledge about parenting style, baby food preference, early childhood development, etc. While it was not possible for me to read all the self-help books on parenting given the time constraints, I did attempt to gather enough information that I felt competent as a parent when making important decisions about my own son. However, there was an internal conflict about the time I was spending learning about this new discipline which could have been spent on professional development. I know in a few years my son will grow older and will not need as much of my time or attention as he does now. The clinical, academic, and professional service is a lifelong mission which will continue well beyond the early years of childhood development. I had to remind myself not to feel guilty for putting my professional career second to my son. Right now, I must focus on the physical, emotional, and psychological wellbeing of my son so he can become a confident, responsible, and secure citizen.

Ensuring Fair Valuation of Echocardiography Services: ASE's Role in the RUC Process

*Contributed by **Denise Garris**, JDG Advisors Group and ASE Regulatory Consultant*

Accurate valuation of medical procedures is essential for fair reimbursement and continued access to high-quality patient care. The American Society of Echocardiography (ASE) plays an active role in the Resource-Based Relative Value Scale (RBRVS) Update Committee (RUC) process, advocating for the appropriate valuation of echocardiography services within the broader healthcare system.

The RUC Process and Its Impact on Physician Reimbursement

The RUC, overseen by the American Medical Association (AMA), is responsible for recommending relative value units (RVUs) for physician services. These RVUs influence Medicare payment rates and serve as benchmarks for private payers and employers. Without strong representation from the echocardiography community, our specialty risks undervaluation, affecting reimbursement, patient access, and the sustainability of our services.

ASE is committed to ensuring that echocardiography procedures are accurately valued, reflecting their complexity, technological advancements, and resource requirements. A critical component of this advocacy is member participation in the RUC survey process, which provides essential data to support ASE's recommendations.

How the RUC Process Works

The RUC process follows a structured approach to determining physician reimbursement:

1. **CPT Code Development** – Before a procedure can be valued, it must have an established CPT code, which ASE and other stakeholders submit for approval through the AMA CPT Editorial Panel.
2. **Survey and Valuation** – Specialty societies conduct surveys to gather data on the time, intensity, and resources required for a procedure. The RUC reviews the data, deliberates on appropriate work, practice expense, and malpractice RVUs, and determines a recommended valuation.
3. **Submission to CMS** – The RUC submits its recommendations to CMS, which adopts, modifies, or rejects them based on broader policy considerations and budget neutrality requirements. Once finalized, the Medicare Physician Fee Schedule (MPFS) establishes reimbursement rates for the following year.

Advocacy, Challenges, and the Future of Echocardiography Valuation

The RUC process has faced scrutiny for lack of transparency and limited input diversity. In response, efforts have focused on enhancing transparency, increasing primary care representation, and broadening stakeholder engagement. Despite these challenges, the AMA RUC remains central to physician payment policy, ensuring that services are valued based on data, expertise, and consensus. Active participation from ASE members is critical to maintaining fair reimbursement and protecting the future of echocardiography.

The Importance of Member Engagement

ASE's ability to advocate effectively in the RUC process depends on member involvement. By participating in surveys and supporting advocacy efforts, members help secure equitable payment policies that sustain echocardiography services and ensure continued patient access. On behalf of ASE, we sincerely thank our members for their dedication and engagement. Your participation strengthens our specialty, drives fair valuation, and helps shape the future of echocardiography.

American Society of Echocardiography • 36th Annual Scientific Sessions

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