















President's Message

My Experience as a

Member of the ASE

Becomes a Council

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This text also appears in the May *JASE*. **OnlineJASE.com**

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American Society of Echocardiography Cover art: "Veterinary Echo: All Creatures Great and Small" Kieran Borgeat, MRCVS, DACVIM, DECVIM, Veterinary Cardiologist, Langford Vets, Bristol, England, United Kingdom

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.

FEBRUARY 2022 STRATEGIC RETREAT UPDATES

Contributed by **Raymond Stainback**, **MD**, **FASE**, Chief of Non-invasive Cardiology at the Texas Heart Institute at Baylor St. Luke's Medical Center in Houston, Texas and associate professor of Medicine at Baylor College of Medicine.

Those who cannot change their minds cannot change anything. -George Bernard Shaw

his month's President's message follows the ASE's annual February strategic planning Board of Directors' meeting. The focus of this year's meeting was an evaluation of the relevance of the ASE's current

five-year strategic plan, developed in the fall of 2019. COVID-19, among other forces, has brought immense changes to the healthcare field, including concerns of patients, the

The focus of this year's meeting was an evaluation of the relevance of the ASE's current five-year strategic plan, developed in the fall of 2019. workforce, and changes in our ability to engage with one another in all settings, including educational meetings. At the recent Strategic Planning Retreat in Arizona, the Board worked together to reassess our goals and the tactics to reach them in light of this "new normal" or "evolving normal." We targeted trends and changes that have had the most significant impacts, including sonographer workforce

shortages, healthcare burnout, high patient demand, expansion of traveling sonographers for hire, increased RVU-based work demands, the growth in telemedicine, the advances in interventional echo, and more. The organization's Board of Directors then focused on adjusting the methods employed to achieve our goals and added new projects that would help us reach measurable progress on our goals. These projects are currently in motion, and the Board will finalize funding in time for our annual meeting in June in Seattle, Washington.

GOAL 1 was re-written to be more targeted, "Develop strategic partnerships to support research." We also added a new strategy, "Create pathways for emerging investigators to support research in cardiovascular ultrasound." This will be advanced by connecting junior and senior investigators and through developing an early investigator toolkit to promote research in cardiovascular ultrasound. ASE also wants to invest in equity-based research and researchers, including those looking at healthcare disparities related to access to cardiovascular ultrasound (CVUS).

GOAL 2, "ASE is the leader in meeting the educational needs of the CVUS community," remains a key focus. The tactics were updated by focusing on improving the usability of our Learning Hub, and creating a focused digital disease library of diseases in partnership with the ImageGuideEcho Registry. We plan an overall review of the management framework, inventory, and staffing for educational offerings and initiatives to better facilitate long-term growth.

GOAL 3, "ASE is indispensable for the development of any new CVUS technology and applications." We reconfirmed our commitment to enhance and build ImageGuideEcho Registry with images and data and to expand programs to help new vendors to partner with ASE to grow the field. The Board also emphasized our interest in developing early guidelines and position papers on the use of artificial intelligence (AI) and machine learning in echocardiography. ASE will establish an Echovation arm to facilitate AI validation to improve uptake of this valuable technology in echo labs.

GOAL 4, "ASE is a growing organization and recognized as the world's leading voice in cardiovascular ultrasound." The Board focused on improving the timeliness of ASE guidelines and expanding their reach through guideline translations, endorsements, and affiliated educational products.

GOAL 5, "ASE embraces and advocates for all cardiovascular ultrasound users." We acknowledged the massive success of our new specialty interest groups (SIGs), with two scheduled to become new councils. Since 2019, the six new SIGs have brought in many new members to ASE, proving our unique appeal for many practicing outside of our traditional membership groups. The Board believes that expanding our "tent" further to new specialty areas will continue to enhance the Society. To this end, the Board voted to enhance our infrastructure to facilitate engagement of new types of ASE members - making dues and membership enrollment more user friendly in a way that also improves management of member demographic information and methods for studying members' levels of engagement. We would like to expand the reach of educational credit transfers, pertinent for a more diverse membership's credentialing needs.

In other updates, I have just met with our incoming president, Stephen H. Little, MD, FASE, and worked on committee and taskforce assignments into the next year. ASE's three primary publications will grow and transition in 2022. In July, new JASE Editor-in-Chief elect, Patricia A. Pellikka, MD, FASE, will begin formal training under departing JASE Editor-in-Chief, Michael H. Picard, MD, FASE. CASE moves from bi-monthly publication this month to monthly, and Echo magazine began monthly publication in January. We are announcing the formation of a new ASE Publications Committee as a timely response to this growth and transition. While exact Publication Committee charges are under development, this will provide an exciting opportunity for the publication editors and this oversight group to coordinate our organizations' publications and other messaging of science, policies, and the potential for thematic messaging and statements. We hope this will improve our appeal to members, the community, and industry members who support our publications in many ways, and for focused ongoing review of the big picture in this area.

We also are going to continue to invest in supporting clinical echocardiography labs and the medical and technical directors who manage them. The ASE's new Echo Lab Medical and Technical Director's Leadership Forum hosted a very successful kick-off webinar in February, "Managing Echo Lab Workforce Changes During and Post COVID," with over 530 registrations. The comments and Q/A material collected from this impactful discussion will be analyzed for our members. After very positive feedback, Quarterly Forums on issues surrounding echo lab management topics will continue, and these are actually open to ASE non-members and any Echo lab member, not just directors.

ASE is also interested in the growing use of intracardiac echo (ICE). This technology has been with us for many years, but straddles the non-invasive and invasive cardiology worlds. In keeping with the ASE's desire to be the home for all users of cardiovascular ultrasound, and with further developments in 3D/4D intracardiac echocardiography (ICE), we are looking forward to convening a new ICE workgroup in order to better educate ICE users in order to best serve patients undergoing structural heart disease interventions. We anticipate this will facilitate new relationships and opportunities.

Lastly, we created a Leadership Academy (LA) Oversight Committee. With two successful LA cohorts under our belt, this incredibly successful initiative has earned this type of sustained operational support. Many thanks go to three ASE past-presidents, Neil Weissman, MD, FASE, (Meritorious Service Award winner in 2022), Vera Rigolin, MD, FASE, for spearheading the LA effort, and to Madhav Swaminathan, MD, FASE, who will be joining efforts to build on the LA's success moving forward.

This text also appears in the May JASE. OnlineJASE.com



My Experience as a Member of the ASE Leadership Academy

Contributed by: **Matthew Vorsanger, MD, FACC, RPVI, FASE**, Weill Cornell Medicine, NYU Grossman School of Medicine, New York, NY



Coming to the Leadership Academy from a perspective of engaging in ASE mainly in the sphere of vascular ultrasound, I found the topics broadly applicable to the challenges faced in all aspects of echocardiography, or indeed, in all of clinical care.

S A MEMBER of the second cohort of ASE's Leadership Academy, it has been a true privilege to participate in this carefully crafted longitudinal experience and to now describe it to the members of ASE at large. Our group began our 18-month journey at the height of the COVID pandemic in the late fall of 2020. Although I had been looking forward to the leadership program even prior to this world changing event, I can think of no time more applicable to the lessons on teamwork, conflict, communication (and many more!) that the Leadership Academy had to offer. Under the incredible direction of Drs. Neil Weissman and Vera Rigolin, our group was led through a carefully curated series of self-directed learning experiences and shared virtual group discussions with speakers ranging from the incredible leadership lecturers Kathy Pearson and Todd Henshaw to words of wisdom from Dr. Madhav Swaminathan (graciously donated by the first leadership academy class as part of the ASE Foundation silent auction). Although our plans for an in-person kickoff meeting were stymied by travel restrictions imposed by the pandemic, I truly felt that over the ensuing months, I developed a deep connection to my other cohort members through our virtual meetings. Coming to the Leadership Academy from a perspective of engaging in ASE mainly in the sphere of vascular ultrasound, I found the topics broadly applicable to the challenges faced in all aspects of echocardiography, or indeed, in all of clinical care. Beyond this, the chance to meet and learn from my colleagues, coming from all over the world and from a diverse background of interests, was truly priceless. Finally meeting them

Finally meeting in person at our recent retreat in Washington, D.C.



in person at our recent retreat in Washington, D.C., was nothing short of amazing. Through this, I have felt more connected than ever to ASE as my professional home, during a time when disconnectedness has been increasingly prevalent. To any members of ASE who have found themselves in an early leadership position in their home institution, I would give the highest recommendation to considering applying to the ASE Leadership Academy. The lessons and the connections forged are an opportunity that cannot be missed.

The application window for the third cohort of the ASE Leadership Academy will open on June 1st.

Dr. Matthew Vorsanger is a clinical cardiologist at the NYU Grossman School of Medicine where he directs the cardiology clinic and cardiac rehabilitation program at Bellevue Hospital, and the vascular ultrasound education program for the cardiovascular disease fellowship. Dr. Vorsanger is a member of the ASE Council on Circulation and Vascular Ultrasound and co-chair of the Circulation track at the 2022 Scientific Sessions. He can be found on Twitter at @MHVorsanger.

Critical Care Echocardiography SIG Becomes a Council

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OINT OF CARE echocardiography has an increasingly important role in care of the critically ill patient. In addition to those with conventional cardiovascular training, individuals with backgrounds in emergency medicine, pulmonary, and anesthesia critical care, as well as hospitalists from many disciplines

Recognizing the need to establish a certification process for those with special competence in CCE, ASE partnered with several other societies have developed expertise in acquisition and interpretation of what has come to be known as Critical Care Echocardiography (CCE).

Currently, many accredited critical care training programs provide limited point of care ultrasound (POCUS) training in their core curriculum, however, a growing number of programs also offer CCE training. ASE recognizes expertise of those performing POCUS as well as those performing CCE and has supported synergies in training and application over the years, including recent practice guidelines for echo lab involvement in CCE and POCUS training.¹

Recognizing the need to establish a certification process for those with special competence in CCE, ASE partnered with several other societies including the Society CCE and the new CCE Council exemplify the power of cardiovascular ultrasound to assist in the care of critically ill patients by diversely trained clinicians who will now be formally represented by ASE

of Critical Care Medicine (SCCM), American College of Chest Physicians (CHEST), American Thoracic Society (ATS), American College of Emergency Physicians (ACEP), American Society of Anesthesiologists (ASA), World Interactive Network Focused on Critical Ultrasound (WINFOCUS), and the Society of Cardiovascular Anesthesiologists (SCA) to develop an exam and certification process administered by the National Board of Echocardiography (NBE). In January 2022, NBE held its third annual examination of special competence in critical care echocardiography, the CCEeXAM.

Several years ago, ASE Past President Jonathan Lindner, MD, FASE, established a CCE workgroup to guide integration of this specialty into ASE. In early 2020, the CCE workgroup transitioned into the Speciality Interest Group (SIG) and since then over 800 ASE members have joined the CCE SIG. A recent survey of the SIG members indicated that most are not cardiologists, but rather have fellowship training in emergency medicine or critical care and their primary motivation for joining the SIG was to access relevant ASE expertise. Accordingly, the ASE Board of Directors voted to advance the CCE SIG to a Council beginning July 1, 2022. The role of the Council will be to address specific needs of CCE users regarding education, research, advocacy, and patient care.

CCE and the new CCE Council exemplify the power of cardiovascular ultrasound to assist in the care of critically ill patients by diversely trained clinicians who will now be formally represented by ASE. Below, we review some of the key CCE-focused applications, training, and education that the CCE Council will address.

Cardiac Hemodynamics: Instantaneous and Essential in Shock

While identification of segmental wall motion abnormalities, ejection fraction, and marked valvular abnormalities remains a vital component in cardiac ultrasound, it does not provide a true estimate of stroke volume and cardiac index in the shocky patient. To maintain aerobic metabolism, tissue oxygen delivery must exceed at least twice the oxygen uptake. Advances in ultrasound technology and training allow instantaneous bedside calculation of cardiac hemodynamics by critical care specialists in order to guide immediate management of volume, medication, respiratory, and mechanical supports. A distinctive feature of CCE is that the intensivist performing image acquisition immediately integrates results into management at the point of care.

Lung Ultrasound: Rapid Differentiation of Dyspnea and Hypoxia

Lung ultrasound is extensively used by critical care providers to rapidly evaluate causes of undifferentiated dyspnea and hypoxia. Over two decades ago, French intensivist Dr. Daniel Lichtenstein first identified signature artifacts that correlated with pathologic conditions.² Integrated lung ultrasound can rapidly determine causes of hemodynamic instability, including tension pneumothorax, and differentiate the etiology of acute hypoxic respiratory failure, including COPD, pneumonia, and interstitial edema. Ultrasonographic lung findings are dynamic and diagnostic in stable patients as well and may be more rapid and accurate indicators of altered cardiovascular physiology than physical exam, chest X-ray, and other diagnostic modalities. Cardiology is poised to incorporate lung ultrasound in standard evaluation of patients.³

What is the Role for Echo Lab – Intensivist Collaboration?

Many patients in the critical care setting receive CCE and standard echocardiographic exams, both of which can be challenging due to difficult windows and patient positioning. Expert sonographers and echocardiographers can assist novice, and sometimes even more advanced, CCE practitioners with diagnostic adequacy of images, guidance on probe positioning and alternate views, as well as appropriateness of echo lab referral for comprehensive transthoracic or transesophageal echocardiography. Assistance can identify artifacts, atypical appearance of normal structures, and rare or unusual findings in real time, using teleguidance capabilities, or upon later review. As cardiologists, echocardiographers can also provide insights regarding next diagnostic steps, including other imaging modalities, and even provide remote guidance in resource limited settings. The CCE intensivist-cardiologist collaboration is mutually beneficial, as intensivists can provide guidance to the echo lab in performance and interpretation of lung ultrasound.

What is the CCE Exam and Why is Certification Important?

The CCEeXAM is offered by the NBE to assess the cognitive knowledge of hemodynamics, cardiac and non-cardiac ultrasonography, and physics principles relevant to CCE.⁴ The CCEeXAM has been administered each January since 2018 with examinees representing a broad spectrum of critical care subspecialities. The pass rate has been approximately 80%, similar to ASEeXAM.⁵

Successful completion of CCEeXAM confers testamur status, leading to NBE certification in CCE. This can be achieved through several pathways all requiring that CCE practitioners demonstrate a comprehensive knowledge, inclusive of technical skills, addressing the breadth of cardiovascular pathophysiology commonly encountered within the critical care setting. The certification process requires completion of

150 complete CCE studies submitted in a supervised logbook to assure competence in image acquisition. This formal assessment affirms and recognizes competence in the integration of cognitive and technical skills related to CCE.

What Educational Resources are Available for CCE Practitioners, and How Can I Prepare for the CCEeXAM?

The SCCM/ASE CCE Board Review Course (live every November, virtual, and on-demand) provides excellent content. CHEST offers multi-day instructional and review CCE courses. The ASE annual Scientific Sessions includes a POCUS/CCE track providing live and on-demand sessions.

We are excited about the establishment of the CCE Council and the multidisciplinary collaborations that have evolved to achieve this opportunity aligned with the ASE mission "to advance cardiovascular ultrasound and improve lives through excellence in education, research, innovation, advocacy, and service to the profession and the public." If you would like to become involved with the CCE Council please contact Suzanne Morris at smorris@asecho.org.

> The CCEeXAM has been administered each January since 2018 with examinees representing a broad spectrum of critical care subspecialities. The pass rate has been approximately 80%, similar to ASEeXAM



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Spontaneous Tourist

Contributed by: Members at Large on behalf of the ASE Pediatric and Congenital Heart Disease Steering Committee: Bhawna Arya, MD, FASE; Pei-Ni Jone, MD, FASE; Neha Soni-Patel, MEd, BSME, RCCS, RDCS(AE/PE), FASE; Seda Tierney, MD, FASE; and Jennifer Tresness, RDCS(PE/AE), RDMS(FE), FASE



HE ASE Scientific Sessions offers a treat for the mind, but you can find a way to reboot your soul, too. After the last couple of years of stress, uncertainty, and exhaustion that we have had, we need this. This year, Seattle will be hosting the ASE 33rd Annual Scientific Sessions from June 10-13. Seattle has many sights to see and the locals can tell you about all of the fun places to explore. Summers in the Puget Sound hold some of the most beautiful weather with clear skies and mountain and

water views in every direction. The PCHD Steering Committee has four active members (Bhawna Arya, MD, FASE; Brian Soriano, MD, FASE; Jennifer Tresness, RDCS(PE/AE), RDMS(FE), FASE, and Luciana Young, MD, FASE) from the area. For anyone who has never visited Seattle, here are a few must-sees and recommendations.

Let's start with the famous Pike Place Public Market. You have likely heard of this

indoor/outdoor market, and possibly even seen one of its many cameos in a movie. The top, open air section of the market holds many booths with local artisans selling their handcrafted goods, beautiful flowers, fresh fruit, and vegetables from local farms, and restaurants. There is also, the world-famous fish market, where you can watch the

energetic team throw fish to the crowds; go ahead and try to catch one on your stroll! Inside and downstairs there are interesting, one-of-a-kind shops and eateries.

For those of you who love your Starbucks coffee and want to see where it all began by visiting the Original Starbucks, all you need to do is walk out of the market and across the street. Starbucks opened its first

canal. If you are looking for indoor activities, museums abound: The Boeing Museum of Flight is a hit for children and adults alike as is the Museum of Pop Culture, Pacific Science Center, Museum of History and Industry (MOHAI), and the Seattle Art Museum.

> As we come together for one of our first in-person meetings in over two years, we are looking forward to sharing a meal and catching up with friends and colleagues from around the country once again! Seattleites consider ourselves foodies, and "Farm to Table" is not a fad in the Pacific Northwest it is the expectation. Most restaurants feature locally sourced fruits and vegetables, meats and the freshest seafood you can get! We

suggest exploring dining options in different neighborhoods, each with its own special vibe. Some of our favorite neighborhoods include Capitol Hill, Ballard, Fremont, Queen Ann, and SODO. We've listed some of our favorite restaurants below.

SOME OF OUR FAVORITE RESTAURANTS:

Pizza: Serious Pie, Mio Posto, Frelard Pizza
Sushi: Japonessa (www.japonessa.com) or Umi (www.umisakehouse.com)
Pacific NW Seafood: Shuckers (www.shuckersseattle.com), Rock Creek (www.rockcreekseattle.com), Taylor Shellfish Oyster Bar (taylorshellfishfarms.com)
Steak: Flintcreek Cattle Company, Red Cow
Italian: Spinasse, Tavolata, The Pink Door
Thai: Noi Thai Cuisine, Pestle Rock, Isarn Thai
The best Taiwanese soup dumplings: Ding Tai Fung
Dinner with a view: Westward, Ray's Boat House, The
Fisherman's Restaurant, Canlis, Mountaineers Club, Little Water Cantina

If you are planning to extend your stay in the area and are considering a bit of local travel, rent a car and consider a trip to one of our three National Parks (Mount Rainier National Park, North Cascades National Park, and Olympic National Park) or drive down the coastline towards Oregon and California. Vancouver, BC, is just a 2-hour drive north of Seattle. Don't forget Hawaii and Alaska are just a short flight from Seattle if you are considering a lengthier adventure!

store in 1971 and esthetically nothing has changed, making this one feel special and bringing on a sense of nostalgia. This location, as expected will usually have a long line trailing outside. However, don't let this deter you! There is always so much going on around you. Musicians, street performers, and artists will entertain you while you wait! The Space Needle is a highlight especially on a sunny day. From the

> top, you will enjoy views of the Olympic Mountains to the West (beyond our beautiful Puget Sound), the North Cascades to the East, and Mt. Baker and Mt. Rainier with their pure white glacial mounds to the North and South respectively. At the bottom of the Needle, you will find the awe inspiring Chihuly Glass Museum which is quite a site to see and really speaks to the 3D minded echocardiographer!

If you venture out of the downtown area, there are parks with hiking trails of varying difficulty, all ultimately leading to breathtaking views of our city and mountains or down to the shores of our lakes and ocean. Some to consider exploring include: Seward Park, Discovery Park, Carkeek Park, Golden Gardens, and Magnuson Park. If you want to cruise the waterways, you and your friends can rent an electric boat in South Lake Union (The Electric Boat Company) and catch up with each other while exploring Lake Washington, Lake Union, and the ship

Seattle, WA

Olympia, WA

C Aberdeen, WA

Grayland, WA

Raymond, WA

Chinook, WA

Portland, OR

😵 Seattle, WA

Mount St Helens

🚱 Cannon Beach, OR

Here is a **2-DAY** road trip itinerary that will leave you feeling like you've experienced the best of the northwest!

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The shortest distance between two points is a straight line, but on this trip, the more curves the more beauty to soak in.

The goal is to hug the coastline as you make your way to Cannon Beach, Oregon. Type the city names (listed on map) into your map app and enjoy the ride. First stop is Raymond, Washington via Aberdeen. This little town is nestled in a beautiful valley to your left and waterways on your right. Make a guick pit stop at the historic Raymond Post office that was built in 1939 mail yourself a postcard. Don't forget a selfie!

As you get closer to Oregon you will see the most beautiful and terrifying bridge that will lead you straight to Astoria. Make a right at the end and keep on driving to Canon Beach. Goonies fans will recognize Haystack Rock where the pirate ship was hidden. Touch the cool Pacific with your toes and stay at one of the hotels right on the beach. You can even take a great hike in Ecola State Park, but don't plan on starting too late in the day as the hike can get long. The views are absolutely worth it.

The next day, head out early and drive through Portland. If you're hungry, stop in the middle of downtown and eat lunch at one of the fantastic food trucks! Then off you go to Mount St. Helen's. Be sure you stop by the visitor's center at the foot of the mountain to get some great history and background. As you drive, keep your eyes to the landscape and watch how the scenery changes as you get closer to the blast zone. You can still see how the foliage and tree growth has recovered 40 years after the eruption. There are hiking trails and the view changes as the clouds move over the mountain. If it's raining, you may not see much when you are at the top, but the ride up will be beautiful. A good tip is to try to get there before noon so you have plenty of time to relax before you drive back to Seattle.

Once back to Seattle you can head straight back to the airport and you're your way back to home sweet home.

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The American Society of Echocardiography and Private Practice Perioperative Echocardiographers

Contributed by: Jeff Astbury, MD, FASE, FACC, FASA, MSBE, MSEE, Butler Health System, Butler, PA, and Lake Erie School of Osteopathic Medicine, Erie, PA; and Burkhard Mackensen, MD, PhD, FASE, University of Washington, Seattle, WA



OST PERIOPERATIVE techocardiographers (cardiologists, cardiac surgeons, and cardiac anesthesiologists) have trained in large, tertiary care academic institutions. Many physicians continue their careers at academic centers. Others choose to practice

There are benefits to the smaller environment, such as more streamlined processes and often a more personal experience. in smaller hospitals, as there are many excellent cardiac interventional/ surgical programs in these facilities.

There are benefits to the smaller environment, such as more streamlined processes and often a more personal experience. Patients, staff, and physicians enjoy skillful, efficient, and personal care close

to home. The physicians complete their workload more effectively and have more predictable lifestyles. However, education in echocardiography may be lacking in the smaller settings, which may be an issue for the perioperative echocardiographer. In smaller institutions, there are fewer trainees, which likely reduces academic activities for perioperative echocardiographers. There is often increased clinical volume per physician, which may decrease time for activities such as board certification, program accreditation, continuing echocardiography education and teaching. It can also be difficult to stay knowledgeable on the many new cardiac procedures guided by echocardiography.

The perioperative echocardiographer must obtain current, state-of-the-art echocardiography information from the leading experts. Since 1975, the most consistent echocardiography resource has been the American Society of Echocardiography (ASE).

For many years, we (the authors) have attended and presented at ASE conferences, utilized ASE guidelines, incorporated ASE recommendations, and have benefited from a variety of ASE educational materials. Each of these components constantly evolve and become more sophisticated. Utilizing these resources, such as regular attendance at echocardiography conferences is vital to maintain the knowledge and skills to keep

Regardless of practice environment, ASE can help you elevate your performance as perioperative echocardiographer to its highest level.

pace with the complex specialty of perioperative echocardiography.

Regardless of practice environment, ASE can help you elevate your performance as perioperative echocardiographer to its highest level. You will greatly benefit from utilizing all the resources of the American Society of echocardiography.

Here are 10 STEPS to excellence through ASE:

- 1. Become a member of ASE now.
- 2. Join ASE's Council on Perioperative Echocardiography (COPE).
- **3.** Attend ASE conferences, seminars and webinars, in-person or remotely. Start with the Annual ASE Scientific Sessions, this year in Seattle, WA, June 10-13, 2022.
- **4.** Review the impressive ASE website. You will find many resources which may ignite your passion for echocardiography!
- 5. Register and prepare for the National Board of Echocardiography (NBE) certification examination in perioperative transesophageal echocardiography, certification examination in adult transesophageal echocardiography, or certification examination in basic transesophageal echocardiography.
- **6.** Sit for and pass the NBE examination you have chosen. You will then be a "Testamur." (Passed the exam but not yet certified.)

- 7. After you have successfully passed the exam, submit your requirements and paperwork for certification as a "NBE Diplomate in Perioperative Transesophageal Echocardiography" by the National Board of Echocardiography.
- **8.** Become more involved in leadership activities, including volunteering for ASE positions on committees, councils, and task groups.
- **9.** Use ASE materials to help you mentor your partners and colleagues in echocardiography, they can follow your path to success through the ASE.
- Apply to become a Fellow of the American Society of Echocardiography (FASE).
 It proves you are willing to do what it takes to prove and illustrate your excellence in echocardiography.

We believe ASE gives physicians a straight path to success in perioperative echocardiography, regardless of practice environment. Please feel free to contact us: Dr. Astbury (jastbury@zoominternet.net), Dr. Mackensen (gbmac@uw.edu), and/or Dallas Lyons (DLyons@ASEecho.org) for further information and guidance.

The Value of High Quality Achieved Through IAC Accreditation in the Echo Lab

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VERY THREE YEARS echo labs anxiously await the accreditation decision letter from the Intersocietal Accreditation Commission (IAC). Did we pass? Are we "good enough?" Were all those hours of gathering cases, updating policies and protocols, and improving quality assurance (QA) processes worth it? To answer that question, one must define the

When one sees that IAC symbol in their echo lab, they should feel a great sense of pride. value of echo lab accreditation. If the purpose is to simply hang a certificate on your wall or have an IAC stamp on your echo reports, then the true value of the accreditation process has been lost. The designation of an IAC accredited lab should be viewed as more than that.

When one sees that IAC symbol in their echo lab, they should feel a great sense of pride. It represents proof to our

patients, referring physicians, and insurance payors that the echo lab is held to high standards of safety and quality. And sure, you don't need to be accredited to have a safe and quality-driven lab. However, having a detailed evaluation from an outside party of experts is meaningful not just in that they can give a stamp of approval on what you're doing right, but in that they can provide feedback on how the lab can improve. And, in my opinion, that's where the real value is – *quality improvement* (QI) – which ultimately aims to provide the best outcomes for our patients.

So, what is quality? The term quality is quite subjective with limited agreement on the definition. The ASE Recommendations for Quality Echo Lab Operations¹ states, "quality can be measured as adherence to established guidelines for the use of a technology to ensure patient satisfaction and outcomes." The document then goes on to reference a model for echo QA and QI called the "dimensions of care" framework which separates clinical echo into the laboratory structure and the imaging process. The laboratory structure is subdivided into four components: the physical laboratory, the equipment, the sonographer, and the physician. The imaging process is subdivided into five components: patient selection, image acquisition, image interpretation, results communication, and the incorporation of results into care. The document and the "dimensions of care" model provide recommendations that are realistic and attainable for all echo labs, and additionally offers benchmarks to assess quality. The document recommends that all echo labs be accredited through the IAC, as

much of the minimum quality recommendations are mandated expectations for accreditation (Picard, Adams et al. 2011).

Another excellent model to use is Masani's Echo Quality Framework² which focuses on *continuous* QI (see Figure 1) (Masani 2018). Note the word continuous. Ultimately, I believe that's what the IAC wants. Going through the accreditation process forces the echo lab to take a magnifying glass to their safety, reporting, and imaging processes and continuously fine-tune them through quality assurance and improvement. The term "continuous quality improvement" stems from a management philosophy which focuses on the expectations of customers and is based on the thought that most products can be improved. The real pearl to remember with continuous QI is that the focus is on processes rather than individuals. It should be viewed as an opportunity to learn and make improvements, not to assign blame to the physician or sonographer. It's not about whether an echo study or echo report is right or wrong, it's about seeing what could have been done better and taking the steps to improve.

I recommend that echo labs investigate different QA and QI models and develop processes that work for their lab. The great thing about the IAC is that it allows echo labs of all different structures and sizes the creativity to design and implement their own internal model to meet the IAC's standards. Are you excited and want to get started?! Know that this is not an overnight deal. If truly done with the purpose of improving patient care via creating a quality-driven echo lab, the accreditation process can be time consuming and resource intensive. It is an investment and commitment by all sonographers, physicians, and organizational leadership.

A good starting point is reading through the IAC Standards and Guidelines for Adult and Pediatric Echocardiography Accreditation³, which can be found at https://intersocietal.org/programs/echocardiography/standards/. Here you'll find the expectations and requirements for your lab, such as training,



FIGURE 2: Example of the TTE protocol adherence and measurement accuracy checklist which is used to fulfill the sonographer technical quality review portion of the IAC Standards

OA - Protocol Adherence and Measurement Accuracy Checklist						Points	Points				
		Year: Ouarte	r:				Possible	Given	Suprasternal Notch		
							1	1	Show long axis of Aortic Arch an	d Descending	Aorta
			-				1	1	Color Doppler Descending Aorta		
Sonograph	er: XX	Reviewer: KB MR#:	Date	of study:			1	1	PW Doppler Descending Aorta		
			Points	Points							
Points	Points		Possible	Given	Apical 4 and 5 Chamber		Points	Points			
Possible	Given	Parasternal Long Axis	1	1	4 chamber view		Possible	Given	Pedof		
1	1	IV w/ increased denth for effusions	2	2	Measurement: LA area trace (a		N/A	N/A	CW Doppler from SSN and RSB (if needed) (m	ust be labeled with location)
1	1	W full screep	1	1	Measurement: RA area trace ar		Points	Points			
-	2.5	Ly run screen	2	-	Measurement: LV diastolic biple		Possible	Given	Technical Notes		
4	3.5	Wedsurements: IVSd, LVIDd, LVPVVd	2	1	Celes Depeler MV		N/A	N/A	Doppler signal measurements a	re averaged in	the setting of arrhythmia (if peeded)
-	1	Weasurement: Ao sinuses - ena alas	N/A	N/A	Zoom MV (if needed)	-	2	2	2D Gain		,
1	1	Color Doppler MV	N/A	N/A	Color zoomed MV (if needed)		1	1	Color Doppler Gain		
1	1	Color Doppler AoV	N/A	N/A	PISA (if needed)		1	1	Spectral Doppler Gain		
1	1	Zoom MV	2	2	CW Doppler MV - show MV infl		2	2	Depth		
1	1	Color Doppler on zoomed MV	1	1	PW Doppler MV - resting- place		2	2	Focus		
1	1	Zoom AoV	3	3	Measurements: E wave, A wave		2	2	Color Doppler Frame Rate ≥17 H	z	
1	1	Color Doppler on zoomed AoV	N/A	N/A	PW Doppler MV - Valsalva (who		1	1	Color Doppler Scale		
1	1	Measurement: LVOT diameter	1	1	DTI MV annulus - lateral		1	1	Spectral Doppler Scale		
3	3	M-mode AoV_MV_LV	1	1	Measurement: lateral DTI e'		2	1	Foreshortening was avoided		
1	1	Color Doppler IV/S	1	1	DTI MV annulus - medial		2	2	Correct Doppler alignment		
	-	Wish DELAX to see Ass. As	1	1	Measurement: medial DTI e'		2	2	Appropriate use of contrast (if c	an't see 22 co	ntiguous apical window segments)
-	-	HIGH FSLAX to see Asc. Ao	1	0	PW Doppler pulmonary vein		Points	Points	Desile and the formation of the		
-	1	Weasurement: Ascending Ao - end o	1	1	5 chamber view		Possible	Given	Patient Information		
1	1	RA/RV view	1	1	Color Doppler AoV		1	1	Height and weight entered		
1	1	Color Doppler TV	N/A	N/A	Zoom AoV (if needed)		1	1	Blood pressure entered		
2	2	CW Doppler TV - show TV inflow an	N/A	N/A	Color zoomed Aov (if needed)		<u> </u>	-	Appropriate indication for study	entered	
N/A	N/A	Measurements: peak/mean TR (lea	1	1	Advanture PVV Doppler LVOT .5-1.0cm Bell	Totals:	117	109.5	Additional Comments:		
	a		1	1	Measurement: IVOT VII	Percentage		94%	*Some of the apicals were fore	shortened. Lo	oking at the baseline stress echo
Points	Points		2	2	CW Doppler AoV - show outflow	Average:		96%	Images from a few years ago,	t looks like th	here is a lower window there.
Possible	Given	Parasternal Short Axis	N/A	N/A	Measurement: AoV Peak/Mean				The LVIDs is a little underestin	nated. The bo	attom point can come down more to
1	1	LV at papillary muscles	1	1	Optimize right heart				the true posterior wall. The to	p point can co	s are off at the applus. The using the
1	1	IV at anex	2	1	Measurement: RVd1 AND RVd2				finger trick: Play the cine loop	nut your fine	zers at each side of the annulus, then
1	1	MV at leaflet tins	1	1	Color Doppler TV				double click your measuremen	t to see whe	re vour measurement lines up. You
1	1	Color Doppler MV	2	2	CW Doppler TV - show TV infloy				can use this trick for the walls	and apex of t	he LV too. (see pics below)
	-	Color Doppler WV	N/A	N/A	Measurements: peak/mean TR				*Remember to PW the pulmon	ary vein	
-	1	Aov/LA level (Base)	1	1	M-mode RV annulus (use tissue				*RVd1 was measured at the TV	annulus rath	er than in the RV at the base. Bring the
1	1	Color Doppler Aov	1	1	Measurement: TAPSE (labeled r				points up , past the TV, into th	e start of the	RV.
1	1	Zoom AoV	1	1	DTI TV annulus						
1	1	Color Doppler zoomed AoV	1	1	Measurement: S' Peak Doppler	velocity (la	beled meas	urement)			
1	1	RVOT/PV and PA Bifurcation	Points	Points							
1	1	Color Doppler on RVOT/PV and PA	Possible	Given	Apical 2 Chamber						
1	1	PW Doppler RVOT	1	1	2 chamber view	-					
1	1	Measurement: RVOT VTI	2	2	Measurement: LA area trace (a	voiding pu	lm. veins &	LAA)			
2	2	CW Doppler PV - show PV outflow a	nd Pl wave	forms (if n	eeded)					-	

FIGURE 3: Example of the TTE report completeness and timeliness checklist which is used to fulfill the report completeness and timeliness portion of the IAC Standards

Physician	e	Sonographer: MRII: DOS:	_		
	TTE F	Report Completeness and Timeliness	Points	Poin	ts
		2022 - Quarter 1	Possib	le Give	n Text Comments (All comments below should be in the Body of the Report
Points	Points		1 1		1 LV size
r onnes	- onits	Democratics and Church Information	1	1	1 LV regional wall motion
Possible	Given	Demographics and Study Information	1	1	LV Wall thickness (nl, remodeling, concentric hyper, eccentric hyper)
1	1	Appropriate indication for the study	1	1	1 RV size
1	1	Height and Weight	1	1	1 RV function
1	1	Blood Pressure	1	1	1 RA size
1	1	Complete or Limited exam	1	1	1 LA size
1	1	Image quality	1	- 1	1 IAS
N/A	N/A	Contrast used	1	1	1 MV structure
Points	Points		1	- 3	1 AoV structure
		Penert Components Numerical Data	1	- 1	1 TV structure
Possible	Given	Report Components - Numerical Data	1	1	1 PV structure
1	1	LVIDd (bottom of report)	1	- 1	1 Pericardium
1	1	LVIDs (bottom of report)	2		2 Aorta size (Sinus of Valsalva and Ascending)
1	1	LVPWd (bottom of report)	1		1 PA size
1	1	IVSd (bottom of report)	1	(LV filling pressure / Diastology
1	1	LVOT Diameter (bottom of report)	1	1	Localization and quantification of abnormal findings
1	1	LV biplane EF (Body of Report)	Points	Poin	ts
1	1	Indexed LA volume (Body of Report)	Dorell	la Chu	Interpretation Timeliness
1	1	Indexed RA volume (bottom of report)	POSSIL	e Give	
2	2	Ao sinus of Valsalva (absolute and indexed values) (Body of Report)		_	Time of completion: 2/3/22 3:45pm Time of interpretation: 2/4/22 8:20am
2	2	Ascending Ao (absolute and indexed values) (Body of Report)	1	-	1 Total time from completion to interpretation: 17 hours, 35 minutes
2	2	LV RWT and LV mass (Body of Report)	Total:	55	53.5 Any inconsistencies in the report? No
2	2	LV volume - EDV and ESV (EDV in Body of Report and ESV at bottom of report)	Percentage:		97% Additional Comments:
1	0.5	RAP (Body of Report)			*Good job: Remember to and estimated 010 is the Disctelers/Memodynamics certion
1	1	IVC size (Body of Report)			*Remember to put estimated KAP in the Diastology/Hemodynamics section
1	1	RVd1 (Body of Report)			Remember to comment on Diastology
1	1	RVd2 (Body of Report)			
1	1	TAPSE (Body of Report)			
1	1	RV S' (Body of Report)			
1	1	LVOT VTI (bottom of report)			
1	1	RVOT VTI (bottom of report)			
2	2	Cardiac Output and Cardiac Index (Body of Report)			
Points	Points		7		
Possible	Given	Report Components - Doppler Evaluation			
1	1	PAP (Peak and Mean) (Body of Report)			
N/A	N/A	Peak/Mean PG (if any valve is stenotic/replaced/repaired) (Body of Report)			
N/A	N/A	Valve area (if any valve is stenotic/replaced/repaired) (Body of Report)			
1	1	Degree of MR (Body of Report)			
1	1	Degree of AI (Body of Report)			
1	1	Degree of TR (Body of Report)			
		Degree of PL (Body of Report)			

certification, continuing education requirements for physicians and sonographers, equipment requirements with proper ergonomic features, appropriate time allotment for imaging, and protocol and reporting requirements. You'll also find the QA and QI requirements which address test appropriateness, physician interpretive quality review, sonographer technical quality review, report completeness and timeliness, correlation of echo findings to other modalities, and all-staff QI meetings.

Lastly, I'll provide some examples of how my lab has incorporated QA/QI projects into the echo lab setting to meet some of the expectations of the IAC. You can also find useful tools and sample templates on the IAC website at https://intersocietal.org/helpful-resources/sample-documents-repository/. Keep in mind that the IAC's goal is not to deny your application. They want your lab to become accredited and they are open to working with you and answering any questions you have every step of the way!

In the Scripps Clinic/La Jolla Memorial Hospital/ Green Hospital adult echo lab there is an Echo Lab Educator position. This position is an Advanced Cardiac Sonographer (ACS) whose job revolves around QA and QI. The Educator coordinates monthly CEU activities, updates system-wide standardized echo protocols, coordinates outside educational opportunities with vendors, provides constructive feedback to sonographers, trains sonographers in new technologies and protocols, coordinates echo research, manages the sonographer mentor group, and they are responsible for the bulk of the accreditation process. The sonographer mentors are an informal group of sonographers who have proven their technical skills and knowledge of echo. They have been chosen to be off a clinical schedule once a week to assist the Educator in quality initiatives and projects, as well as train sonographers. Keep in mind that this structure is built within a large echo lab of >50 sonographers, so there are a lot of available resources. I recognize that not all labs can adopt this structure. Here are some of the things Scripps has done to meet the standards of IAC accreditation.

For sonographer technical quality review, they adopted a process, borrowed from the Duke echo lab. All sonographers have random studies that are assessed for technical quality and protocol adherence. An Excel spreadsheet is used to grade the studies and each view and measurement has a weighted score (see Figure 2). If a view or measurement is performed and done correctly, the sonographer gets full points. If a view or measurement is performed but needs improvement, the sonographer gets half points. And if a view or measurement is missed, the sonographer

FIGURE 4: Example of the interpretive review worksheets staff were asked to complete

· · · · · · · · · · · · · · · · · · ·	TTE on Case 90
TTE on Case 19 Your name:	Your name:
Last Name: Case 19 First Name: QA MR#: 019	Last Name: Case 90 First Name: QA MR#: 090
Please circle the appropriate <i>Paravalvular Aortic Regurgitation</i> findings (*NO in between grades ie: NO mild-mod, NO mod-sev) : AoV PVR: none / trace / mild / moderate / severe	Is there a pericardial effusion, a pleural effusion, or both? Pericardial Pleural Both What size would you grade the pericardial effusion? None Trivial Small Moderate Large Is there evidence of hemodynamic compromise? Yes No Is there echo criteria for tamponade? Yes No Notes:
TTE on Case 20	TTE on Case 91 Last Name: Case 91 First Name: QA MR#: 091
Last Name: Case 20 First Name: QA MR#: 020 Please circle the appropriate <i>Paravalvular Aortic Regurgitation</i> findings: (*NO in between grades ie: NO mild-mod, NO mod-sev) :	Is there a pericardial effusion, a pleural effusion, or both? Pericardial Pleural Both What size would you grade the pericardial effusion? None Trivial Small Moderate Large Is there evidence of hemodynamic compromise? Yes No Is there echo criteria for tamponade? Yes No
AoV PVR: none / trace / mild / moderate / severe	Notes:

misses all points. The spreadsheet is added up and gives a percentage score. Multiple studies can be assessed, and the average score is expected to be 98% or higher. If a sonographer is not meeting the 98% compliance expectation, they fall into a performance improvement program where the mentors and Educator work closely with them, reassessing their studies every few weeks until the score is improved. If there is no improvement after working closely with the sonographer, corrective action can be considered. The sonographer scores are also used for their annual performance evaluations. A similar scoring spreadsheet is also used for the report completeness and timeliness assessments (**see Figure 3**).

Scripps has tried many different formats for the IAC mandated QI meetings. Here is an example of a fun project, which also meets the requirements for physician interpretive review. Six cases with different imaging modalities (TTE, TEE, SE) and a specific pathology are chosen and deidentified, then reimported back into the PACS system. All echocardiographers, cardiology fellows, and cardiac sonographers are given worksheets with a few questions specific to a pathology. The image assessment and questions are not time consuming or burdensome. The Educator then gathers the results and presents them to the entire group during the QI meeting. Everyone receives their own answers to the questions, so they can see how they compare to others. Each case is reviewed as a group, and there is open conversation about each case. Everyone's personal answers are anonymous, and thus it is a comfortable learning environment for everyone. (See Figures 4-5)

FIGURE 5: Example of the interpretive review slides presented in a QI meeting. In this case, the staff were asked to assess left ventricular filling pressure by echo. The results were compared to same-day right heart catheterization, so the staff were able to see how their answers compared to the cath data as well.



References

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2. Masani, N. (2018). "The Echocardiography Quality Framework: a comprehensive, patient-centered approach to quality assurance and continuous service improvement." Echo Res Pract.

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Come and Join Us for Sound Waves in Seattle: Connecting the World ASE 33rd Annual Scientific Sessions

Contributed by: Carol Mitchell, PhD, ACS, RDMS, RDCS, RVT, RT(R), FASE, FSDMS, 2022 Scientific Sessions Co-chair, University of Wisconsin Hospital, Madison, WI



ED BY OUR Scientific Sessions Chair, Sharon Mulvagh, MD, FASE, FRCP(C), FACC and sonographers, Bonita Anderson, M.APPL.SC, DMU, AMS, ACS,FASE, Matt Umland, RDCS,ACS,FASE, and Madeline Jankowski, BS, RDCS,ACS,FASE, we are excited to share information about the upcoming ASE 33rd Annual Scientific Sessions with the theme of "Connecting the World." For the past two years the Scientific

we are excited to share information about the upcoming ASE 33rd Annual Scientific Sessions Sessions have been in a virtual format and this year we are planning for a unique experience with a hybrid format providing both in-person and virtual sessions. The ASE 2022 Scientific Sessions will be held in Seattle, Washington, June 10-13, for the in-person event. Registration for the in-person event includes

your choice of attending 12 different tracks, up to 23 CM/MOC credits, and 44 additional on-demand sessions for up to an additional 52 CM/MOC credits with access for 90 days from July 11, 2022 to Sunday, October 9, 2022 (75 total CME/MC credits pending approval). The virtual registration includes live streaming from the plenary room for up to 20 CME/MOC credits, and access to an additional 44 on-demand sessions for up to 52 additional CME/MOC credits with 90-day access from July 11, 2022 to October 9, 2022 (72 total CME/MOC credits *pending approval*).

Highlights for the sessions include; the Gardin Lecture keynote speaker Dr. Suzanne Simard, PhD, professor of Forest Ecology at the University of British Columbia and author for Finding The Mother Tree: Discovering the Wisdom of the Forest, (soon to be made into a Hollywood movie starring Amy Adams), live hands-on scanning Do-It-Yourself (DIY) sessions to include hands-on scanning for 3D image and strain acquisition, imaging to identify abdominal aortic aneurysms, deep venous thrombosis, and imaging techniques for evaluating congenital heart disease. These sessions do require advanced registration and will be limited to allow all participants hands-on scanning experiences. We will again be offering our Learning Labs

Whether you attend in person or virtually, ASE 2022 promises to offer something for everyone

to include sessions on 3D cropping (Valves), Myocardial strain imaging, 3D Volume/Function Chamber Quantification, and Strain and 3D on Congenital Heart Disease Patients. The Learning Labs also will require advanced registration and space is limited.

In addition to the live hands-on DIY and Learning Lab sessions, we will be offering several networking sessions to include Council Networking Events, a Welcome Reception featuring ASE Specialty Interest Groups (SIG), and Women in Echo Networking Events. We will also have the President's Reception, Early Career Networking Event, and the Echo Expo to meet with ASE leaders, industry representatives, and colleagues. There will be an interactive case-based competition, ShowCASE, on Sunday afternoon. Other special sessions include; Women in Echo, the Value Summit, Global Artificial Intelligence, and Quality Improvement to name a few.

The 33rd Scientific Sessions will also highlight the latest advances in cardiovascular ultrasound research in the new "Best of Imaging Research" session, along with our traditional research competitions recognizing exceptional research: The Brian Haluska Sonographer Research Award Competition and the Arthur E. Weyman Young Investigator's Award Competition.

Whether you attend in person or virtually, ASE 2022 promises to offer something for everyone – no matter if you are a new sonographer just beginning your career or a seasoned sonographer practicing with advanced skills! The program will offer education in all areas of cardiovascular ultrasound including: professional development, POCUS/CCE, Circulation and Vascular, Pediatrics/ACHD, Structural Heart Disease, Perioperative, Innovation/Technology, Imaging Fundamentals and an Educator's Summit focusing on the topic of Contrast and Competency. We look forward to seeing you in-person or virtually at the 33rd Annual ASE Scientific Sessions.



cs Founders 20

Uning the 2022 ASE Scientific Sessions, the ASE Foundation will hold its 13th annual Research Awards Gala. At this event, ASE will honor two luminaries: Dr. Harvey Feigenbaum and Dr. Liv Hatle. ASE's current leaders selected these two luminaries as notable physician-investigators who have played major roles in the evolution of echocardiography as a clinical discipline. Most long-term members of ASE will be familiar with their names and career accomplishments, but since ASE's founding in 1975, our organization has grown considerably in size, scope, and diversity. Accordingly, some of our newer members, and those whose primary clinical activities do not focus on general cardiology in adults, might not be familiar with the important contributions that Drs. Feigenbaum and Hatle have made to our field.

It would be easy – and accurate – to state that Drs. Feigenbaum and Hatle are certainly among the founders of clinical echocardiography. Before discussing some of their key contributions, let's consider the meaning of the term "founder." When used as a noun, a *founder* of an organization is a person who brings that organization into being; he or she has a passion for establishing that organization, getting it off the ground, and

helping it to succeed. It may be easy (at least, if you live in Seattle) to identify Bill Gates and Paul Allen as the founders of Microsoft, and Jeff Bezos as the founder of Amazon, but I believe that identifying the "founders" of the discipline of echocardiography is a bit more difficult. It's also worth remembering that, when used as a verb, the word "founder" describes

what happens when a ship fills with water and sinks! Hence, I would not want to imply that Drs. Feigenbaum and Hatle were the only "founders" of echocardiography, since such an assertion would cause this brief article to founder. Nevertheless, I would argue – vigorously – that Drs. Feigenbaum and Hatle



Contributed by Alan S. Pearlman, MD, FASE, ASE Past President, and Editor-in-Chief, Emeritus, Journal of the American Society of Echocardiography (JASE)

It would be easy - and accurate to state that Drs. Feigenbaum and Hatle are certainly among

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echocardiography

have made many key contributions to the evolution of echocardiography, and it is quite fitting and proper to honor their important accomplishments. I would also acknowledge that since 1953, when Edler and Hertz first described the use of ultrasound to examine the human heart, many others have played important roles in the remarkable advances in echocardiographic technology, techniques, and applications that have made echocardiography the extraordinarily powerful diagnostic method that it is today. My failure to mention the many others who have made important contributions to our field is not intended to minimize – or to overlook – their achievements.



Harvey Feigenbaum, MD, FASE

Dr. Feigenbaum has been a lifelong Hoosier. He was born in East Chicago, Indiana, and received his AB and MD degrees (with honors) at Indiana University (IU). After a medical internship in Philadelphia, he returned to Indianapolis for residency training and joined the faculty at IU, in 1962, as an instructor in the department of medicine. He is currently a Distinguished Professor of Medicine at IU and a member of the Krannert Institute of Cardiology. He told me once that since he does not play golf, he prefers to continue working, writing, and teaching.

Dr. Feigenbaum is the founder of ASE, its first President, the founding editor of the Journal of the American Society of Echocardiography (JASE), and the recipient of far too many awards to list individually. Others have often referred to Dr. Feigenbaum as the "Father of Echocardiography," but he is always quick to point out that he was not the first person to use echocardiography, and not even the first American to use echocardiography. Rather, he considers the term "Father of Echocardiography" to reflect his influence on his many "professional offspring" and the large group of colleagues who learned echocardiography from him. It is fair to acknowledge that

Others have often referred to Dr. Feigenhaum as the "Father of Echocardiography"

> Dr. Feigenbaum has taught all of ASE's leaders through visits to his laboratory in Indianapolis, and through his books, publications, and lectures. He has always been quick to note that he does not consider himself an "imager," but rather a clinical cardiologist who discovered that echocardiography helped him take better care of his patients.

> During the more than 50 years that he has been at the forefront of clinical echocardiography. Dr. Feigenbaum has made more contributions than can be described in this short article. He and his colleagues were the first to use echocardiography (initially using A-mode, and later M-mode) to evaluate for pericardial effusion, to identify the septal and posterior left ventricular (LV) walls and to measure wall thickness, to describe and validate techniques for evaluating LV size and function quantitatively, and to examine regional wall motion in patients with known or suspected coronary disease. He and his colleagues were also among the first to use 2-dimensional (2D) echocardiography to examine LV size and function, to image the coronary orifices, and to study the pulmonic valve. They also championed the

I believe it fair to say that if it were not for Dr. Feigenhaum, there might be no ASE and no JASE, and many of us would have had very different professional careers.

use of echocardiography at rest and

with stress as a practical means to identify inducible wall abnormalities as an indicator of significant coronary artery narrowings. In addition to his interest in using echocardiographic methods for a variety of clinical applications, he highlighted the value of novel methods for recording echocardiographic data, such as the use of strip chart recorders for M-mode findings, and video tape recorders for real-time 2D data. Dr. Feigenbaum was an early, vocal, and effective proponent for digital echocardiography, which not only facilitated side-by-side comparison of images at rest and with stress, but also allowed echocardiographers to store, view, and study tomographic and volumetric images, and Doppler velocity profiles, conveniently, remotely, and in a readily accessible manner. Digital echocardiography certainly enhanced the way we teach, and our ability to share images with other caregivers.

Another important contribution, which I believe has been somewhat overlooked, was Dr. Feigenbaum's early recognition that non-physicians might be well-suited to acquire high-quality echocardiographic images and data. If memory serves, I believe that Dr. Feigenbaum was the first to teach a "sonographer" to perform echocardiographic studies, and to champion the value of cardiac sonographers as skilled professionals who enable the acquisition of high quality, complete studies that many physicians had (and still have) neither the time nor the experience to perform themselves. The sonographers with whom I was fortunate to work over many years taught me a great deal, and I'm confident that my own experience has not been unique.

I believe it fair to say that if it were not for Dr. Feigenbaum, there might be no ASE and no JASE, and many of us would have had very different professional careers.

Those members who are interested in the history of echocardiography, and who plan to participate in the 33rd Annual Scientific Sessions of the American Society of Echocardiography in Seattle between June 10-13, 2022 (whether in person, or virtually), should note that on Monday, June 13, the Feigenbaum Lecture will be given by Dr. Feigenbaum himself. He will discuss the "History of Echocardiography: A Personal Perspective". Don't miss this unique opportunity to learn about the history of echocardiography by someone who helped to write it!



Liv Kristin Hatle, MD, FASE

Dr. Liv Hatle is a Norwegian physician who was raised in the far north of Norway, near its border with Finland and Russia, and who developed a passion for hemodynamics and sunny weather. She studied in Trondheim, specializing in internal medicine and cardiology, and worked briefly as a faculty member at the University Hospital in Oslo. Subsequently, she served for nearly 20 years as a consultant cardiologist at the University Hospital in Trondheim, Norway's former Viking capital. Later in her career, Dr. Hatle moved to Riyadh, Saudi Arabia, as the Deputy Chair of the Department of Cardiovascular Diseases at the King Faisal Specialist Hospital

and Research Center. Before retiring from clinical work, she held appointments at the University Hospitals in Linkøping, Sweden and in Leuven, Belgium. She now spends much of her time on the Mediterranean coast of Spain, and is said to be one of the most avid gardeners in her community.

Perhaps serendipitously, the University Hospital in Trondheim was located quite near the Norwegian Institute of Technology (now known as the Norwegian University of Science and Technology, NTNU). This proximity allowed her to work with a young engineer at the Norwegian Institute of Technology, Bjorn Angelsen, PhD. In the 1970s, investigators in Japan, the United States, and France were using pulsed Doppler instruments to study cardiac flow. Dr. Angelsen developed a device which he termed the Pulsed Echo Doppler Flowmeter (hence the acronym PEDOF), later adding continuous-wave Doppler, which allowed the user to record higher flow velocities than those that could be measured using pulsed Doppler methods. Norwegian investigators, including Drs. Hatle and Angelsen, used the PEDOF device to evaluate the magnitude and time course of the pressure drop across the stenotic mitral valve. They adapted the results of prior invasive hemodynamic studies in order to develop a non-invasive method to measure the "pressure halftime," and thereby to determine the orifice area of the stenotic mitral valve. Subsequently. Hatle and Angelsen used the PEDOF device to estimate pulmonary artery systolic pressure from the velocity of tricuspid regurgitation, and to measure the pressure drop across the stenotic aortic valve.

Dr. Hotle was not content simply to describe these exciting approaches, and thought it equally important to teach others how to use Doppler methods.

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it equally important to teach others how to use Doppler methods. She introduced the PEDOF device to American investigators, and spent two years as a Visiting Professor at Stanford University, and as a Visiting Scientist at the Mayo Clinic. During this time, she not only helped others to develop skills in recording and analyzing Doppler velocity curves, but also helped to derive new insights into diastolic left ventricular function and pericardial disorders. Dr. Hatle is soft-spoken and avoids self-promotion; her "boundless modesty" was noted when she was awarded an honorary doctorate from the Katholieke Universiteit Leuven in 2020 and described as "one of the grandes dames of cardiology." Dr. Hatle has a remarkably detailed and sophisticated understanding of cardiac hemodynamics, and through her teachings helped to stimulate the evolution of clinical echocardiography services into "noninvasive imaging and hemodynamic laboratories."

Many individuals have contributed to the evolution of echocardiography, and space constraints do not allow an extensive discussion, in this article, of those who have made noteworthy contributions. Nevertheless, there is no doubt that the important contributions of Dr. Feigenbaum and Dr. Hatle certainly deserve to be honored at the ASE Foundation's 2022 Research Awards Gala. Please join me in applauding their accomplishments, and in thanking them for helping all of us to take better care of our patients!

Highlights from the ASE 2021 CARDIOVASCULAR ULTRASOUND Trends Report

Contributed by **Dana Hanson, PhD**, Senior Project Manager, in ASE's External Relations Department

In November of 2021, over 1,500 people, which included ASE members and nonmembers, volunteered to participate in ASE's 2021 Cardiovascular Ultrasound Trends Survey. The Trends Survey is comprised of questions covering a wide range of topics from day-to-day practice management and equipment use to more specialized areas of echo application and innovation. The bi-annual survey offers a point-in-time snapshot of practices, challenges, and opportunities shaping the field of echocardiography and cardiovascular ultrasound technology. Survey results help to inform the development of ASE programs and resources and are shared, in full, with ASE's Industry Roundtable partners. ASE is pleased to present a few key takeaways and notable trends.

Quality Assurance

Quality assurance (QA) standards, such as those outlined in ASE's Recommendations for Quality Echocardiography Laboratory Operations, offer echo labs rigorous, data-driven protocols for assessing and improving practice.¹ This may include providing guidance on ways to best optimize resources, reduce organizational inefficiencies, refine screening methods, and ensure patient safety and patient-centered quality care.

Trends Survey respondents were asked to report on the implementation of QA protocols within their labs. Over 62% indicated that their labs have established QA programs for echo quality. Another 10% of respondents reported that QA programs are currently in development. Less than half of the respondents (42%) said their labs have tracking processes for monitoring repeat studies. QA for reader interpretation appears to be a fairly widespread practice, with over 84% of respondents reporting protocols in place. QA programs for AI, however, are less common. Only 9% of respondents reported having established AI protocols in their labs.

Artificial Intelligence and Echocardiography

The integration of AI with echo technology is quickly transforming the field of practice. As suggested in the tables below, echo labs are increasingly using AI to support lab workflow as those in the field begin to fully understand and recognize the potential AI offers. Among the most anticipated advantages reported by respondents included automated workflow, increased standardization, comprehensive screening and facilitated interpretation.



How would you assess your current level of knowledge/understanding about artificial intelligence (AI) and how it could be implemented in cardiovascular ultrasound?

	2019 Results (n=573)	2021 Results (n=870)
I'm an expert in AI and fully understand its utility for CVUS	2%	1%
I have a fairly strong understanding of AI, but want to understand more	11%	14%
I have some understanding of AI, but need much more information about how to apply it to CVUS	40%	45%
I have little to no understanding of AI but want to learn	39%	31%
I have little to no understanding but don't feel that I need to learn	7%	9%



Is your echo lab currently using any form of artificial intelligence (AI)? This could include AI capabilities that are built into your ultrasound machines, analysis software, or reporting software provided by your ultrasound manufacturers.

	2019 Results	2021 Results
	(n=576)	(n=891)
Yes	23%	37%
No	58%	46%
l don't know	15%	14%
Not applicable	4%	3%



Ultrasound Enhancing Agents

Ultrasound enhancing agents (UEAs) have proven to be a highly effective, yet still under-utilized, diagnostic aid for assessing left ventricular systolic function. While the rate of UEA adoption across healthcare settings has been slow, a review of Trends Survey findings over the past four years suggests a clear and steady increase in their use, as shown in the table at the top of page 29. Of factors contributing to decisions not to use UEA, the following concerns were most reported: UEA takes too much time and effort to administer, UEA use disrupts workflow, and too many sonographers are not trained to use UEAs.

What is your best estimate of the percentage of echos performed in your lab or institution which include the use of an ultrasound enhancing agent (UEA) for left ventricular opacification?

	2017 Results	2019 Results	2021 Results
	(n=491)	(n=573)	(n=881)
0% of echos performed using UEA	25%	24%	19%
1-15% of echos performed using UEA	45%	40%	30%
16-30% of echos performed using UEA	19%	23%	24%
>31% of echos performed using UEA	11%	16%	27%

Global Longitudinal Strain

As evident in the table below, global longitudinal strain (GLS) has experienced broader acceptance and use over the last several years. In 2017, 30% of respondents indicated that GLS was not used in their labs; by 2021, only 5 % of respondents reported non-use. When asked to identify the most typical application of GLS, over 80% of respondents reported its use with patients experiencing complications from chemotherapy and 57% reported using GLS for patients in heart failure.

In your lab or institution, please estimate for what percentage of patients is global longitudinal stain acquired, quantified, and reported?

	2017 Results (n=478)	2019 Results (n=570)	2021 Results (n=865)
0% of patients	30%	15%	5%
1 to 25% of patients	49%	51%	44%
26 to 50% of patients	12%	12%	19%
51-75% of patients	4%	6%	8%
>75% of patients	5%	7%	8%

These and other findings from ASE's Cardiovascular Ultrasound Trends Survey offer invaluable insight into factors driving decision-making, echo innovation, and patient outcomes. In response to today's rapidly evolving medical landscape, ASE will begin deploying the Trends Survey annually instead of bi-annually. We look forward to sharing our findings and keeping you informed.

1. Picard, MH, Adams, D, Bierig, SM, et al. American Society of Echocardiography recommendations for quality echocardiography laboratory operations. Journal of the American Society of Echocardiography, 2011; 24(1), 1-10. doi: 10.1016/j.echo.2010.11.006



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