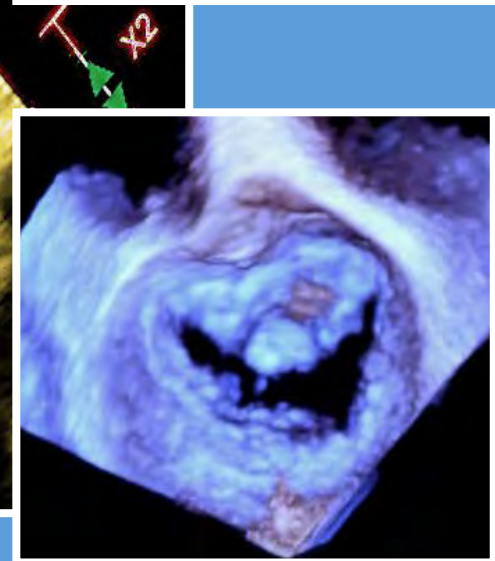
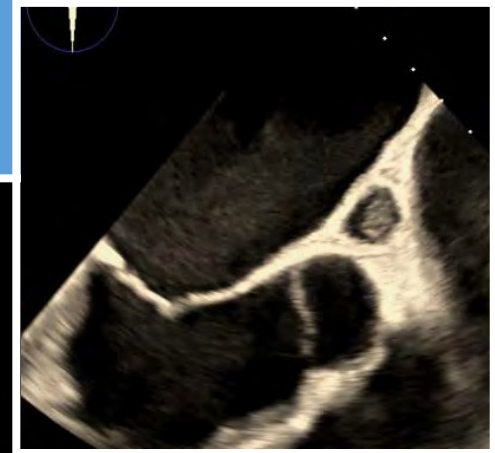
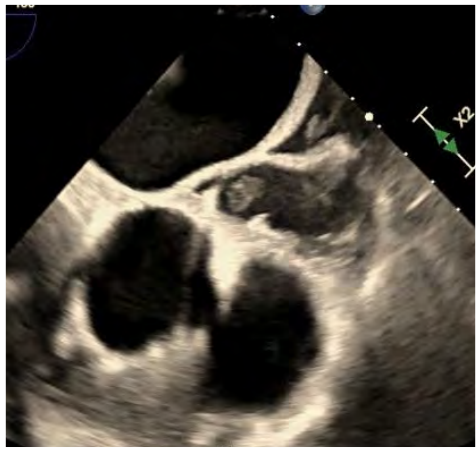


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2024 EDUCATION CALENDAR

CONTENT AVAILABLE NOW

[Advanced Echo: Echo Access Online Course](#)

Featuring the best content from Echo Hawaii and State-of-the-Art Echocardiography

Jointly provided by ASE and the ASE Foundation

[Registered Physician in Vascular Interpretation \(RPVI\) Online Review Course](#)

An overview of all vascular imaging modalities for board review, introductory learning, or as a review for experienced imaging readers

MARCH 2024

[Interventions, and Diastology/Imaging Summit](#)

March 7-10, 2024

*Fontainebleau Miami Beach
Miami, FL*

Provided by Cleveland Clinic Educational Foundation and in cooperation with ASE

MAY 2024

[25th Annual ASCeXAM Review Course Virtual](#)

Content Available May 6, 2024.

Jointly provided by ASE and the ASE Foundation

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

JUNE 2024

[35th Annual Scientific Sessions](#)

June 14-16, 2024

*Oregon Convention Center
Portland, OR*

Jointly provided by ASE and the ASE Foundation

SEPTEMBER 2024

SAVE THE DATE

[4th Annual Advanced Imaging Techniques for Sonographers](#)

September 7-8, 2024

Virtual Experience

Jointly provided by ASE and the ASE Foundation

OCTOBER 2024

SAVE THE DATE

[12th Annual Echo Florida](#)

October 12-14, 2024

*Disney's Grand Floridian
Resort & Spa
Orlando, FL*

Jointly provided by ASE and the ASE Foundation

SAVE THE DATE

[3rd Annual Echo in Pediatric & Congenital Heart Disease](#)

October 26-27, 2024

Virtual Experience

Jointly provided by ASE and the ASE Foundation

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

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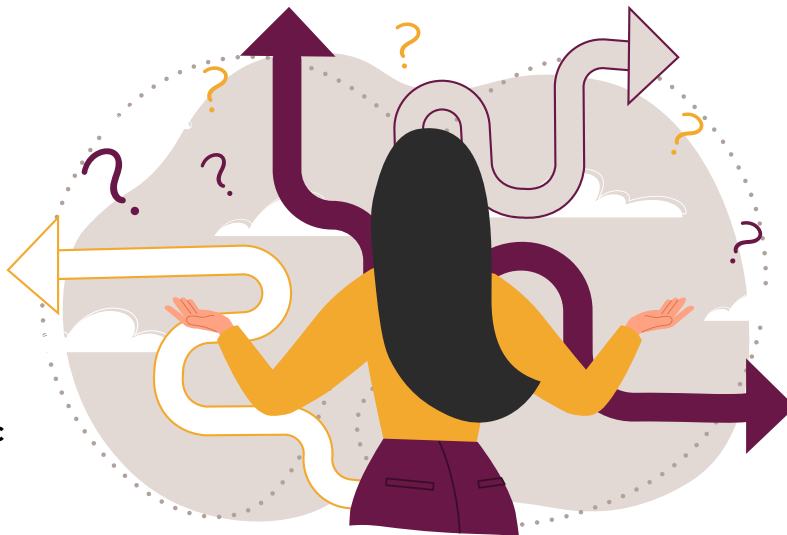


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Introducing the 2024 Guidelines for Targeted Neonatal Echocardiography

AMERICAN SOCIETY OF ECHOCARDIOGRAPHY







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Cover art: "A Heart within a Heart" Karla Kurrelmeyer, MD, FASE and Clara I. Angulo, ACS, MBA, FASE, Methodist DeBakey Heart & Vascular Center Echocardiography Laboratory at the Houston Methodist Hospital-Main Campus, Houston, Texas

EDITORS' NOTE

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

NAVIGATING THE EDUCATIONAL LANDSCAPE OF THE AMERICAN SOCIETY OF ECHOCARDIOGRAPHY

Contributed by **Benjamin W. Eidem, MD, FASE**, Director of Pediatric and Congenital Echocardiography, Mayo Clinic and Professor of Pediatrics and Medicine at Mayo Clinic College of Medicine, Departments of Pediatrics and Cardiology, Rochester, MN

“

Education has been and continues to be a major priority for ASE, and our Society has a wide range of diverse educational activities that I would like to highlight.”

The primary focus of my year as president of the American Society of Echocardiography (ASE) is our membership. Integral to this vision is the education of our members. Education has been and continues to be a major priority for ASE, and our Society has a wide range of diverse educational activities that I would like to highlight.

The ASE **Learning Hub** provides our members with robust educational offerings. By searching the Learning Hub catalog, members can find webinars, e-cases, JASE articles, products related to ASE guidelines and standards, review courses, live course libraries, and much, much more. In addition, to accommodate evolving learning styles, ASE has recently developed **microlearning modules**. Through these concise video tutorials, ASE's microlearning initiatives allow professionals to access and absorb critical information rapidly on their own schedules.

Live courses continue to provide a unique platform for networking and in-depth learning. ASE's annual Scientific Sessions, Learning Labs, and conferences, including Echo Florida, Echo Hawaii, and State-of-the-Art Echocardiography, attract echocardiography professionals worldwide. Attendees can engage in hands-on experiences, view live demonstrations, and participate in discussions. The collaborative atmosphere fosters meaningful connections and allows for immersive learning, and a hybrid option is often available.

Virtual courses offer a flexible alternative to traditional educational settings. These courses typically include live and/or prerecorded lectures and interactive discussions. Access to on-demand content allows learners to pace themselves and revisit unclear concepts. An example is the Annual Echo in Pediatric and Congenital Heart Disease Virtual Experience.



Webinars offer real-time interaction and knowledge exchange among participants from different geographical locations. ASE's webinars bring experts to the virtual stage, offering valuable insights into the latest trends, research, and case studies in echocardiography. The live Q&A sessions enhance engagement and facilitate clarification of knowledge.

Published **ASE guidelines** serve as an essential resource for echocardiography practitioners by providing easy access to standardized protocols, recommendations, and best practices. They play a pivotal role in ensuring quality and consistency in daily practice. Guideline products include posters, flip charts, pocket guides, webinars, and JASE continuing medical education articles. ASE's **curriculum development** efforts are crucial to ensuring that echocardiography professionals receive a well-rounded education. By systematically organizing topics, competencies, and learning objectives, ASE provides a structured path for learners. This approach enhances consistency in education and ensures that critical knowledge areas are covered. Current examples are the Cardiovascular Point-of-Care Imaging for the Medical Student and Novice User and the Sonographer Curriculum Resource.

An important strategic goal for the coming year includes the development of both traditional and novel methodologies to augment the education and training of our adult echocardiography practitioners in the field of **adult congenital heart disease (ACHD)**. This will include new educational webinars and podcasts, publication of an ACHD guidelines and standards document, increased educational content in our virtual and live courses, and enhanced hands-on training opportunities in ACHD patients in a variety of formats and settings.

In conclusion, ASE's educational activities are a cornerstone of our mission to advance the field of echocardiography and embody a vital core value of our society. ASE's ongoing commitment to delivering high-quality education is essential for ensuring that our echocardiography professionals are well prepared to provide optimal patient care in an ever-evolving health care landscape.

Finally, I want to sincerely thank our ASE education team for their creativity, passion, and hard work in making our educational portfolio the tremendous asset that it is, not only to our Society and its members but also to the global community of cardiovascular ultrasound users worldwide. Special thanks to **Christina LaFuria**, **Merri Bremer**, and **Leo Lopez** for their leadership in this vital area of our Society and for assisting me in the writing of this month's President's Message.

This text also appears in the February JASE.

OnlineJASE.com

Benjamin W. Eidem,
MD, FASE
ASE President



Sonographer

VOLUNTEER OF THE MONTH-FEBRUARY

Congratulations

Cassie Huntington, BS, RCS, FASE

*University of Utah Health,
Salt Lake City, UT*



of the U.S. that includes Utah, Wyoming, Nevada, Idaho, Montana, and western Colorado. In this role, I am responsible for the education of our sonographers and sonography students.

I also oversee the quality control process and ensure that our protocols are up to date with the current guidelines. My favorite part of my job is working with students and seeing the moment when echo concepts start to make sense to them.

When and how did you get involved with cardiovascular ultrasound?

I first learned of cardiovascular ultrasound when I was a junior in college at Westfield State University while majoring in athletic training. I realized a little late in the game that I did not want to be an athletic trainer, but I was not sure what it was that I wanted to do. I ultimately decided to stick it out and find a program to apply to as a post-grad. While I was searching for what I wanted to study after graduation, one of my professors brought in a guest speaker, Richie Palma, who ran the Hoffman Heart and Vascular Institute School of Cardiac Ultrasound in Connecticut. If you've had the opportunity to attend a lecture by Richie, you know that his passion for echo is contagious. Needless to say, after the lecture, I was hooked. I was able to shadow a few sonographers at one of the program's clinical sites and was blown away by the technology and how involved the sonographers were in patient care. I loved the diagnostic aspect of echo and the ability to speak with people from all walks of life. After shadowing, I applied to the program and began a few months after graduating from college.

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

I am the Echo Educator and Technical Director at the University of Utah Health in Salt Lake City, Utah. It is the only academic medical center in the state and serves residents of the Mountain West portion

When and how did you get involved with the ASE?

I first became involved in the ASE while still in echo school when my classmates and I volunteered at the ASE Scientific Sessions held in Minneapolis, Minne-

“

Volunteering not only allows me to give back, it allows me to connect with people who share similar values.

”

“My advice would be to attend the ASE Scientific Sessions and see what others are doing in the field. It is so inspiring to see echo from a different perspective than what you see every day in your own echo lab.”

sota. After our volunteer shifts ended, we were free to attend presentations and meet with leaders in the field. It was and remains inspiring to see how the field of echocardiography is evolving not just through physicians, but through sonographers.

Why do you volunteer for ASE?

I volunteer because I believe in quality patient care that is based in education. The field of echocardiography is constantly evolving, and ASE provides the latest research, guidelines, and exposure to technology that will help sonographers evolve alongside it. Volunteering not only allows me to give back, it allows me to connect with people who share similar values.

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 have volunteered in the DIY sessions working closely with vendors to help teach attendees how to obtain 3D volume acquisitions. A session like this is a great way to expose sonographers to a well-developed technology and show how it can be implemented in any echo lab. It not only benefits those in attendance, but ultimately improves patient care which is the goal of each echo we perform.

I am also a member of the Utah Echo Society and am working on becoming more involved by finding speakers to give lectures on relevant topics. My goal for the society is to have a more sonographer driven curriculum where there can be lectures and open discussions that address the depth of knowledge that is required in our field. As in my echo lab, I want to focus on the reasoning behind the assessments that we do rather than just memorizing a protocol. It is vital that we all understand the “why” behind everything we do.

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

My advice would be to attend the ASE Scientific Sessions and see what others are doing in the field. It is so inspiring to see echo from a different perspective than what you see every day in your own echo lab. If you're unsure about what it is you want to do with echo, attending the Scientific Sessions is a great opportunity to talk to fellow sonographers. In my experience, everyone is open and willing to discuss how they got to where they are in the field and will oftentimes offer to help in any way they can. In addition to attending conferences, having a mentor is an invaluable resource to help problem solve and share ideas with. I have been fortunate to have many great mentors in my career; some of whom were my preceptors in echo school, coworkers, and those that I have met while networking at conferences.

What is your vision for the future of cardiovascular sonography?

My hope for the future of echocardiography is more access to and proficiency of cutting-edge technology to help bridge the gap between studies performed at large medical centers and those performed in rural/outreach settings. For example, some patients in the Mountain West travel upwards of eight hours to have an echo at my hospital because their rural facilities do not have the equipment or staffing to perform the necessary assessments. The cost and logistics of traveling such distances can prevent patients from seeking essential care. I believe that utilization of the advancements made in the telehealth space as well as quality virtual education can provide sonographers the opportunities to receive live feedback on their studies and cost-effective ways to continue their education.

Pathways for Critical Care Echocardiography Fellows

Contributed by **Paul Mayo, MD, FASE**, and
Seth Koenig, MD, Northwell Health, Queens, NY



The NBE CCE committee has noticed a strong interest amongst critical care fellows from all of the subspecialties in achieving the new certification.

THE NATIONAL BOARD of Echocardiography (NBE) offers several types of certifications in echocardiography. Well known to the cardiology community is the ASEeXAM that, with fulfillment of accompanying requirements, allows the cardiologist to achieve certification in echocardiography. This has been available since the mid-nineties and stands as a durable and well subscribed rite of passage for graduating cardiology fellows. The NBE offers a similarly rigorous certification process for intraoperative transesophageal echocardiography which serves as a definitive indication of competence for the clinician who manages the complexities of intra operative cardiac surgery and advanced mechanical circulatory support devices.

Since 2018, the NBE has offered certification in critical care echocardiography (CCE). This has engendered considerable interest in the critical care community, as competence in the advanced echocardiography skills required for CCE practice allows the intensivist to combine the attributes of advanced cardiac imaging with capability in general critical care ultrasonography (thoracic, abdominal, venous, and procedural guidance) that is already in widespread use in critical care units. It is both natural and predictable that some intensivists seek additional skills to better help their patients in the form of competence in advanced critical care echocardiography. Approximately 1400 clinicians have taken the CCeXAM and increasing numbers are finishing the demanding logbook and CME requirements needed to achieve NBE Certification in CCE.

The NBE CCE committee has noticed a strong interest amongst critical care fellows from all of the subspecialties in achieving the new certification. Large numbers of fellows from the pulmonary/critical care medicine, critical care medicine, anesthesia critical care, and surgical critical care fellowship programs are signing up for the examination and working to complete their logbooks. In the New York City area, fellows are opting to take the examination in the second year of their three-year pulmonary critical care fellowship track while working to complete image set requirements throughout the fellowship period. Hardworking anesthesiology critical care fellows are passing the examination and completing their 150 full studies during one year of critical care fellowship training. Enterprising medical residents have been taking and passing the examination and stand ready to start logbook collection upon commencement of fellowship. Critical care fellows are key to the future of CCE, as they will become a new generation of attendings who will train their fellows and help their patients with their skill at CCE.

This raises the question as to the motivation of fellows to pursue the arduous task of preparing for the CCeXAM (hundreds of hours of study) and to scan and interpret 150 full image set studies, all of which must be on critically ill patients with all the technical difficulties of image acquisition in this population i.e. no routine echo lab studies are permitted.

1. **Fellows** recognize that CCE is a powerful imaging method that provides them with the capability to rapidly meet the needs of their sickest patients at point of care in the intensive care unit.
2. **Fellows** like to learn new techniques with utility in the intensive care unit of which CCE is a prime example. As the fellow develops capability in advanced CCE, they may be supervised by attendings who are not competent in CCE. This reverses the traditional hierarchy of knowledge.
3. **Fellows** are aware that the added credential of NBE certification in CCE defines

The major challenge that attendings face once they have completed the examination is the lack of the time required to complete the logbook given the pressures of work, finances, and family responsibilities.

them as having an unusual and valued skill when it comes to employment and academic advancement. The combination of competence in general critical care ultrasonography with mastery of critical care echocardiography is particularly desirable to clinical academic training programs who seek junior faculty with this capability.

There are major advantages to finishing certification requirements while in fellowship training that include more straightforward documentation requirements compared to attendings who seek certification, availability of motivated mentors, time to study and scan, and availability of scanning subjects. The major challenge that attendings face once they have completed the examination is the lack of the time required to complete the logbook given the pressures of work, finances, and family responsibilities. The best time to complete NBE CCE certification requirements is during fellowship training. Given that increasing numbers of fellows will be interested in developing skill at CCE and obtaining NBE certification that represents evidence of competence, how should they proceed?

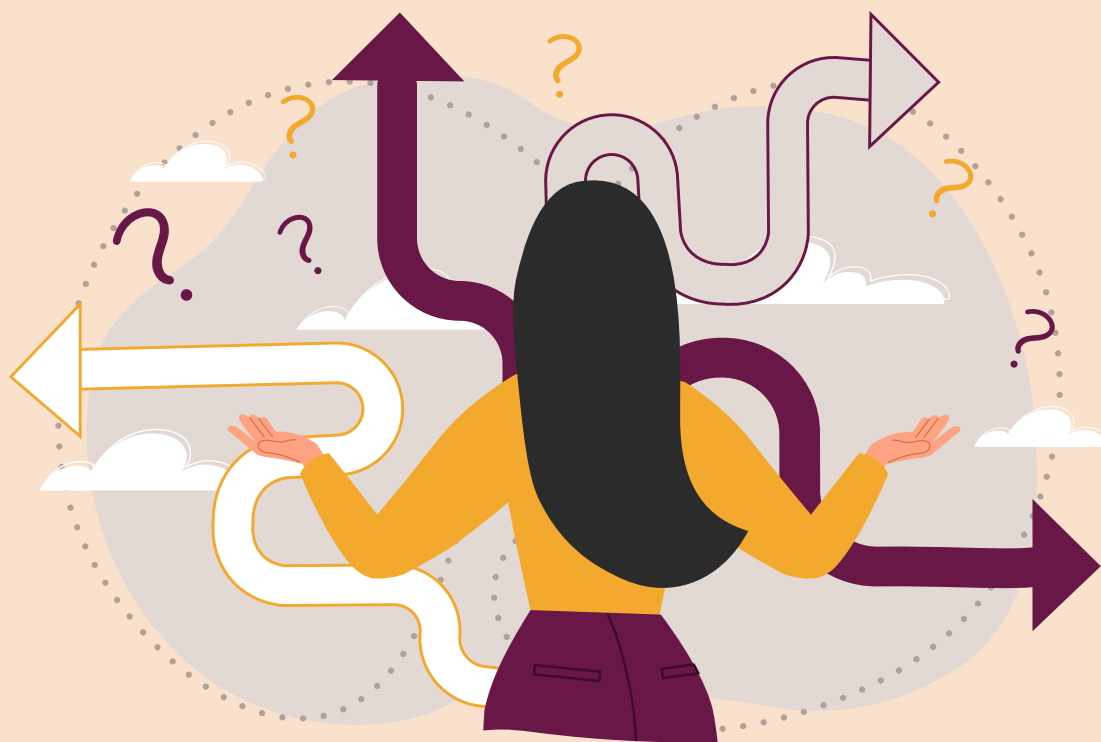
For those fellows who are engaged in one-year fellowships (anesthesiology, surgical critical care, or critical care medicine

added on to another subspecialty fellowship), there is considerable time pressure. They will need to immediately identify a faculty mentor who is skilled at CCE to guide image acquisition training to complete the logbook requirement in one year. Simultaneously, they will need to prepare for the examination, all this while mastering the intricacies of general critical care. Many one-year fellows have managed the challenge, as evidenced by the significant number who have achieved certification. For fellows who are in two-year (critical care medicine) and three-year (pulmonary/critical care medicine) fellowship programs, time pressure is less of a concern, particularly for the latter group. It is best not to engage with CCE until there is full mastery of general critical care ultrasonography, so serious study of the cognitive elements of CCE required for the CCeXAM should wait until the second year of fellowship.

For two-year fellows, it is feasible to prepare for the examination and complete the logbook. For three-year fellows, there is a major advantage to taking the examination in the second year of fellowship. In the third year, the pulmonary boards are in

November and must be the major focus of effort. The period for preparation for the CCeXAM in January is therefore limited resulting in a pressured period of “catchup” study. Many fellows in the New York City area have elected to take the examination in their second year with very high pass rates. For the cardiology fellow who has decided to complete an additional year of critical care fellowship training to qualify as a cardiac intensivist, the choice is between qualifying for the NBE cardiology or the critical care echocardiography certification. As cardiology fellowship provides comprehensive training in echocardiography, some critical care cardiologists may choose to fulfill requirements for NBE cardiology certification by taking the ASeXAM. An alternative pathway would be to fulfill requirements for NBE certification in CCE including taking the CCeXAM with the understanding that this pathway covers important aspects of critical care ultrasonography such as thoracic, abdominal, and vascular components. The choice remains by personal preference.

Drs. Mayo and Koenig both served on the writing committee for the CCeXAM.



Words to Live By -

Pearls from Pediatric Imaging Masters

Contributed by **Jimmy Lu, MD, FASE**,
University of Michigan, Ann Arbor, Michigan



*Each of us
has a mentor,
someone who
has impacted us
in profound ways.*

EACH OF US HAS a mentor, someone who has impacted us in profound ways, whose voice we hear when performing or reading a complicated echocardiogram. This month, we collected pearls of wisdom from renowned teachers in the world of pediatric cardiology, so we might all learn from them. These respected mentors offered advice from imaging to life, whichever stage of our career.

Piers Barker, MD, FASE (PB) is a Professor at Duke University, where he is the Director of Pediatric Cardiac Noninvasive Imaging. He has served as the chair of the ASE Pediatric and Congenital Heart Disease Steering Committee and Co-chair of the ASE Guidelines and Standards Committee.

Meryl Cohen, MD, MEd, FASE (MC) is a Professor at Children's Hospital of Philadelphia, where she is the Associate Chief of the Division of Cardiology, and the Associate Dean for Faculty Development. She was awarded the 2018 ASE Excellence in Teaching in Pediatrics Award.

Ben Eidem, MD, FASE (BE) is a Professor at the Mayo Clinic, where he is the Director of the Pediatric & Congenital Echocardiography Laboratory. He currently serves as the president of the ASE Board of Directors (only the second pediatric cardiologist in that role).

Greg Ensing, MD, FASE (GE) is a Professor at the University of Michigan. He was awarded the 2022 ASE Richard Popp Excellence in Teaching Award.

Mark Friedberg, MD, PhD, FASE (MF) is a Professor at the Hospital for Sick Children in Toronto. He is a leader in research, helping to shape our understanding of ventricular function in patients with congenital heart disease, for which he was awarded the 2018 ASE Harvey Feigenbaum award.

Peter Frommelt, MD, FASE (PF) is a Professor at the Medical College of Wisconsin, where he is the Director of Pediatric Echocardiography. He was awarded the 2023 ASE Excellence in Teaching in Pediatrics Award.

Tal Geva, MD, FASE (TG) is a Professor at Harvard and is the Chair of the Department of Cardiology at Boston Children's Hospital. He was awarded the 2014 ASE Excellence in Teaching in Pediatrics Award.

Carol Mitchell, PhD, RDMS, RDCS, RVT, RT(R), ACS, FASE (CM) is an Associate Professor (CHS) at the University of Wisconsin, Madison. She was awarded the 2022 ASE Sonographer Lifetime Achievement Award.

▼ **Piers Barker, MD, FASE (PB)**



▲ **Meryl Cohen, MD, MSEd, FASE (MC)**

Pearls for Any Stage

PB

- Trust is the starting and ending point of everything we do in our echo lab. Patients and families trust us in their most vulnerable moments. Sonographers are trusted to do their best work, or realize when they need to ask for help. Fellows are trusted to use their best judgment. Attendings are trusted to lead and teach. Trust creates a culture of empowerment and raises everyone's game. Trust is everything.
- From an old camp director whose morning talk I have always carried close to my heart: "It is always better to sleep well than to eat well."

PF

- Excellence is not an act, but a habit (stolen from Aristotle). Great imagers expect complete, high-quality studies that provide all the anatomic/physiologic/functional data every time. People tend to slide towards mediocrity if not held to the highest standards.

MF

- Engage in clinical areas and research you are passionate about. Don't despair when things are challenging.
- Even with new advances, don't forget the basics!
- Connect what you image to physiology.

- Spending time with your family is a priority.
- Enjoy and learn from your colleagues.

TG

- What we say/write directly impacts clinical care and the outcomes of our patients. Clear, concise, specific, and accurate language is paramount to the provision of care in pediatric and congenital heart disease. These examples highlight some fun opportunities for a more precise language:
 - The word “patent” in “patent foramen ovale” is superfluous. When a foramen is present, it is patent. The correct term should be “foramen ovale.” Same with “patent ductus arteriosus.” By definition, a duct is a tube allowing blood flow.
 - Head and neck vessels: What is actually meant by this nonsensical term is “brachiocephalic vessels,” or, if you prefer—“arm and head vessels.” All vessels reaching the head must pass through the neck.

For Early Career Imagers

MC

- Spend the time to really learn your craft and leave your ego at the door. Asking for a second opinion is not a weakness, it is a strength. It’s about the patient, not you.

▼ Ben Eidem, MD, FASE (BE)



▲ Greg Ensing, MD, FASE (GE)

- Partner with someone who is willing and able to share the responsibilities of home life and live close to extended family if possible. It will make things a lot easier. Don’t forget to take care of yourself.

PB

- Imaging is a process of moving from Unconscious Incompetence to Conscious Incompetence, and then to Conscious Competence before ending at Unconscious Competence. There’s no way to skip a step. Any new challenge also knocks you back down this ladder, like fetal or TEE. You never get to rest at the top.
- Always beware of the pulmonary veins. Always. Everyone has either missed total veins or seen them missed in their center. They’re sometimes next to impossible to see, but that’s no excuse. You didn’t choose an easy field.
- In fetal echo, always beware of transposition. It can be shockingly easy to miss. Add it to your mental checklist, and listen to every tip and trick that’s out there about how to rule it in or out.
- When learning TEE: Take a breath. Always take time to set up the machine and the image (credit to Greg Ensing) before starting to scan, no matter the crisis. Take another breath. Work the problem. Don’t be afraid to ask for help. Communicate with the OR team. Your role is part quarterback, part referee, part play-by-play announcer, part color commentator, and part comic relief, while

also knowing when to be quiet. Use the quiet time to exhale.

- It's not about whether you fail, it's all about how you recover. As a teenager, working through the skill levels required to become a sailing instructor, I failed the last level. I was devastated. Worse, I was afraid of the boat, of capsizing, of high wind – so the boat was in control of me. Through the undeserved grace of a mentor, I was given a chance to take the test again, and the first day I flipped the boat. I'll never forget the instructor coming up to me, while I was in still in the water, and telling me that he didn't care that I failed, or that I flipped, and that everything – including life – was all about the recovery. I ended up passing the level, and taught sailing for four years, but I've never forgotten that August day on Lake Baptiste.

GE

- When someone insists, listen. You are learning from their mistakes.
- You have learned one very good way, not the only way or even necessarily the best way. Keep an open mind and put off “helpful suggestions for change” until you are sure.
- If you accept “good enough,” you will find that your images are more than occasionally “almost

▼ Mark Friedberg, MD, PhD, FASE (MF)



▲ Peter Frommelt, MD, FASE (PF)

good enough” (to make an important diagnosis or assessment). From the very beginning, make the most beautiful pictures possible.

- If it is important: use BELT AND SUSPENDERS assessment (multiple ways to keep your pants up). For hemodynamics this means measuring RV/PA pressures by TR, VSD velocity, pulmonary regurgitation velocity, septal position, and looking at pulmonary acceleration time.

BE

- Your first “real” job after completing fellowship will likely not be your last job. Do everything that you can to learn and be productive in whatever setting that you are in so that when your “dream job” becomes available you will be competitive and ready.
- Learn to scan with both hands. Be comfortable imaging on multiple different echo platforms.

CM

- Set short-term professional goals for what you want to achieve the next five years and make a list of who you can contact to help you reach those goals.
- Run to the new technology and learn how to use it!

PF

- Find a specific area of interest in the field that interests you and become the smartest person in the room about that topic. It will help focus your academic work and raise your self-esteem.

For Mid-Career Imagers

CM

- Set long-term goals for what you want to achieve in your lifetime, both personal and professional and identify mentors who can help you reach those goals both personally and professionally.
- Become a super user of new technology and begin to take on leadership and educator roles in your work environment.

PF

- Reinvent yourself every five to ten years, so that you are taking on new challenges/roles/areas of interest. It is invigorating and can open unexpected doors.

GE

- When in doubt, say YES. You will fall into unanticipated adventures.
- When the ICU question is: “assess for possible ...,” the real question is “why is my patient doing poorly?” If the first question is answered negatively, persist with a detailed exam until you identify the unappreciated problem and save a life.
- Seldom is a person, program, or institution as good or as bad as it seems. Expect goodness and keep a very open mind.

▼ Tal Geva, MD, FASE (TG)



▲ Carol Mitchell, PhD, RDMS, RDCS, RVT, RT(R), ACS, FASE (CM)

MC

- Be decisive in your interpretation and practice with a questioning attitude. Don't assume a diagnosis is correct because someone said it was (including a surgeon). Go the extra mile to assure you are as accurate as possible and forgive yourself if you make an error.
- Try to have dinner with your family or friends as much as possible to make sure you stay connected. Hire people to do tasks that take up your time at home (e.g. don't clean your own toilets). Don't forget to take care of yourself.

BE

- Being an echocardiographer in the world of congenital heart disease is humbling for all of us. Never assume an echo is normal until you have personally scanned the patient and seen all of the anatomy yourself.
- Always be careful and thoughtful when you are offered a “title” or a new “responsibility” in your career (leadership role, educational role, academic / research role, etc.) The “title” is great for the first week but then you have to do the job.

PB

- Reflect on everything. One of the ironies of our careers is that we lose our “coaches” when we become attendings – so we often have to coach ourselves. Always look back at each fetal counseling session – what could have gone better, what

worked, what didn't? Same for fellow and sonographer interactions, or interactions with colleagues. How was your last scan? Seek out coaches and mentors, but appreciate that self-reflection also helps you, most importantly, coach yourself.

For Senior Imagers

PF

- Being recognized for your work should become less important than supporting and elevating your local colleagues and lab. Take satisfaction in others' success.

CM

- Start thinking about how you want people to remember you – both in your personal life and professional life and work to become that person.
- Become a mentor to friends and co-workers, be open to sharing advice and work to help others reach their goals!

BE

- Success in life and in our career is wonderful, but family is the most important.
- Never assume that you have seen all the various lesions that can occur in imaging congenital heart disease – I constantly see/image new things all the time, even after 25+ years in practice.

GE

- Aggressively pursue developing technologies or approaches. Some will be of limited benefit, but with others you will find yourself ahead of the curve in paradigm changing advancements. Be the one who embraces change, excellence.
- The request for help or an opinion is the ultimate compliment. Ask frequently and when asked, provide your best ASAP.
- When hiring---do your homework. No decision will pay off or hurt you more. Phone the last supervisor and colleague—with specific questions.

PB

- It's not about you. Your fellows and trainees are supposed to surpass you. Give credit in every direction – to those who you are raising up, and to those upon whose shoulders you stand. Most importantly, give credit to your family and friends

Most importantly, give credit to your family and friends who have almost certainly made your career possible. And then go focus on the patients and your family who need you most.

who have almost certainly made your career possible. And then go focus on the patients and your family who need you most.

- For the imaging director: Never forget the privilege of your position, but don't take yourself too seriously. To paraphrase a famous quote: If you can laugh at yourself, you will forever be amused. Being an imaging director is like being the captain of a pirate ship – you enjoy our position more through the willingness of your team rather than any higher authority, you have influence rather than power, and mutiny is never far off the table. Share the stories – you have the age and experience to know them all, and there's always something to learn from listening to the legends of prior generations.

MC

- Learn new modalities to get out of your comfort zone. Be honest about your own errors and show them to younger faculty and trainees. Don't be arrogant.
- Do things and be with people that bring you joy. Consider what you want your career legacy to be and work towards that. Don't forget to take care of yourself.

New ASE Perioperative Echocardiography Council (COPE)

Steering Committee Members

Contributed by **Abimbola Faloye, MD, FASE, FASA**, Emory Healthcare, Atlanta, GA; **Kiran Belani, MD, FASE**, Northwestern Medicine, Chicago, IL; **Charles Nyman, MBBCH**, Brigham & Women's Hospital, Boston, MA; and **Kim Howard-Quijano, MD, MS, FASE**, University of Pittsburgh Medical Center, Pittsburgh, PA



COPE is a diverse multidisciplinary council including anesthesiologists, cardiologists, surgeons, and sonographers at all levels of training and professional practice.

THE ASE PERIOPERATIVE echocardiography council (COPE) would like to introduce our new esteemed steering committee members; Drs. Abimbola Faloye, Kiran Belani, and Charles Nyman. COPE is a diverse multidisciplinary council including anesthesiologists, cardiologists, surgeons, and sonographers at all levels of training and professional practice. COPE is dedicated to supporting perioperative echocardiography interest areas through educational offerings to those practicing cardiovascular ultrasound for perioperative patients, guidance on standards of care related to perioperative echocardiography, and a forum for members with similar interests to network and advance cardiovascular ultrasound.

Abimbola (Bola) Faloye, MD, FASE, FASA

Dr. Bola Faloye is an Associate Professor in the division of cardiothoracic anesthesiology, Emory University School of Medicine, a fellow of ASE and a fellow of the American Society of Anesthesiology (ASA).

Dr. Faloye completed her anesthesiology residency at Duke University, Durham, NC, and fellowship in adult cardiothoracic anesthesiology at Emory University, Atlanta, GA. She is a graduate of the ASE Leadership Academy, cohort #2. Dr. Faloye serves as the Director of Mentors in Medical Education Program for the Department of Anesthesiology, and previously served as the Division Chief of Adult Cardiothoracic Anesthesiology at Grady Memorial Hospital.

Within the ASE, Dr. Faloye has volunteered in numerous roles including as a member of the ASE Foundation Annual Appeal Committee, ImageGuide Echo Registry Committee, Women in Echo Working Group, and the ASE Leadership Academy Oversight Committee. She is a perioperative echocardiographer and educator. She lectures regionally, nationally, and internationally on perioperative echocardiography



including at the annual Society of Cardiovascular Anesthesiologists' (SCA) Echo Week and ASE Scientific Sessions. Dr. Faloye also serves as the Chair of the SCA Women in Cardiothoracic Anesthesiology Special Interest Group. Dr. Faloye's passion for perioperative echo education led her to join COPE.



Kiran Belani, MD, FASE, FACC

Dr. Kiran Belani is a cardiothoracic anesthesiologist, Director of Perioperative Echocardiography, and Anesthesiology Director of Interventional and Structural Imaging at Northwestern Medicine (Chicago, IL). She completed her Anesthesiology Residency and Chief Residency from Beth Israel Deaconess Medical Center (BIDMC) in Boston, MA (2018), and her Fellowship in Adult Cardiothoracic Anesthesiology from Duke University Medical Center (2019). She was subsequently selected to be the first Interventional Echocardiography and Adult Structural Heart Disease Anesthesia fellow for the inaugural program at BIDMC (2019-2020). This remains the first program of its kind for anesthesia-trained clinicians to master

advanced three-dimensional interventional TEE. Dr. Belani has authored several echocardiographic and structural heart disease publications and book chapters. She is a Diplomate of the National Board of Echocardiography, a Fellow of the American Society of Echocardiography (ASE), and Fellow of the American College of Cardiology (ACC). She sits on several national societal committees with both the Society of Cardiovascular Anesthesiologists (SCA) on the Echo Week Planning Committee, as well as the ASE Scientific Sessions Planning Committee.

Dr. Belani first discovered ASE through her mentors at Duke. Since then, she has found the Society be a perfect match for her passion for echocardiography in cardiac procedures, and ASE has truly become her professional “home.” She now serves the COPE as the Perioperative Meeting Track Co-Chair, and she will subsequently be Track Chair for the 2025 Scientific Sessions. She is also a member of the ASE Leadership Academy Cohort #3. Her local institutional and national commitment to perioperative echocardiography makes her a significant COPE contributor, and her additional perspective and dedicated training in interventional echocardiography position her well to contribute to both of these parallel and rapidly evolving clinical arenas.



Charles Nyman, MD, MBBCH

Dr. Nyman completed medical school at the University of the Witwatersrand in South Africa and his anesthesiology residency at the University of Illinois at Chicago. He subsequently performed a fellowship in Adult Cardiothoracic Anesthesiology at the Brigham and Women’s Hospital and subsequently joined clinical faculty in 2011. Dr. Charles Nyman is currently the Director Interventional Cardiac Anesthesia at Brigham and Women’s Hospital and former Program Director of the Adult Cardiothoracic Fellowship Program. He is committed to educating trainees and colleagues in the role of advanced perioperative echocardiography. Dr. Nyman lectures regularly at both regional and national meetings in the United States and internationally including the Society of Cardiovascular Anesthesiologists Annual meeting, Society of Cardiovascular Anesthesiologists Echo Week and ASE. In addition, he serves as the course co-director for the Society of Cardiovascular Anesthesiologists annual SCA Echo meeting.

Dr. Nyman was first introduced to the ASE and COPE by colleagues and has participated at numerous ASE Scientific Sessions and contributed to the 2020 [Guidelines for the Use of Transesophageal Echocardiography to Assist with Surgical Decision-Making in the Operating Room](#).



Highlights from the New Guideline for Performing a Comprehensive Pediatric Transthoracic Echocardiogram

This month, ASE published new comprehensive pediatric transthoracic echocardiography guidelines. This document updates and replaces the guidelines and recommendations previously published by ASE in 2006 on the performance of a pediatric echocardiogram and in 2010 on quantification methods during a pediatric echocardiogram. Since 2010, the care of children with heart disease has evolved because of improvements in scientific knowledge and technology. Echocardiography has played a big role in this evolution, particularly in terms of its growing ability to provide more accurate information related to cardiac anatomy, hemodynamics, and function. As such, there have been a host of documents published over the last decade which relate to the use of pediatric and congenital echocardiography in clinical care. The new

guidelines published this month in JASE help to organize all the capabilities of echocardiography so that they can be utilized in a rational and logical way when caring for pediatric patients.

This document is designed to be an easy and convenient reference tool for busy clinicians and sonographers. Tables and figures succinctly summarize and illustrate essential information. Examples of tables include:

- Standard protocols for the comprehensive transthoracic echocardiographic study and report, including illustrations of standard echocardiographic views.
- Suggested components of an agitated saline contrast or UEA protocol (See Table below).
- Summary of methods, utility, strengths, and weaknesses of methods to assess right and left ventricular function.
- Summary of reference documents and guidelines related to pediatric and congenital echocardiography.

Contributed by

Daniel L Saurers, RCS, RDCS, FASE,
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Suggested components of an agitated saline contrast and UEA protocol

AGITATED SALINE CONTRAST STUDY

<p>Appropriate indication</p> <ul style="list-style-type: none"> • Possible intracardiac shunt • Possible intrapulmonary shunt • Possible unroofed coronary sinus
<p>Location of intravenous site for contrast injection</p> <ul style="list-style-type: none"> • Right antecubital vein if right SVC • Left antecubital vein if left SVC draining to the coronary sinus • Bilateral antecubital veins to evaluate bilateral SVCs ± connecting vein
<p>Appropriate transthoracic echocardiographic view</p> <ul style="list-style-type: none"> • Apical four-chamber view • Subcostal coronal view
<p>Harmonic imaging to improve visualization of contrast</p>
<p>Contrast preparation and injection</p> <ul style="list-style-type: none"> • Two 10-mL syringes connected by a three-way stopcock, one syringe filled with normal saline + 0.5-1 mL air ± 1 mL blood from patient, agitated by passing mixture from one syringe to the other • Rapid injection of mixture while acquiring a long image clip (up to 10 sec) • Full contrast opacification of the right atrium and right ventricle
<p>Testing for intracardiac (interatrial) shunt</p> <ul style="list-style-type: none"> • Likely present if contrast appears in LA within three to six cardiac cycles after RA opacification • Valsalva maneuver or gentle pressure on abdomen to increase RA pressure as confirmed by leftward shift of atrial septum helpful if initial test negative
<p>Testing for intrapulmonary shunt</p> <ul style="list-style-type: none"> • Likely present if contrast appears in LA later than six cardiac cycles after RA opacification
<p>Testing for unroofed coronary sinus</p> <ul style="list-style-type: none"> • Agitated saline contrast injection into a left superior systemic vein • Present if contrast appears in coronary sinus then simultaneously in RA and LA

UEA STUDY

<p>Approved pediatric indication (Lumason)</p> <ul style="list-style-type: none"> • LV cavity opacification
<p>Off-label indications</p> <ul style="list-style-type: none"> • Intracardiac mass • Apical hypertrophic cardiomyopathy • LV noncompaction • Differences in myocardial perfusion at rest or with stress

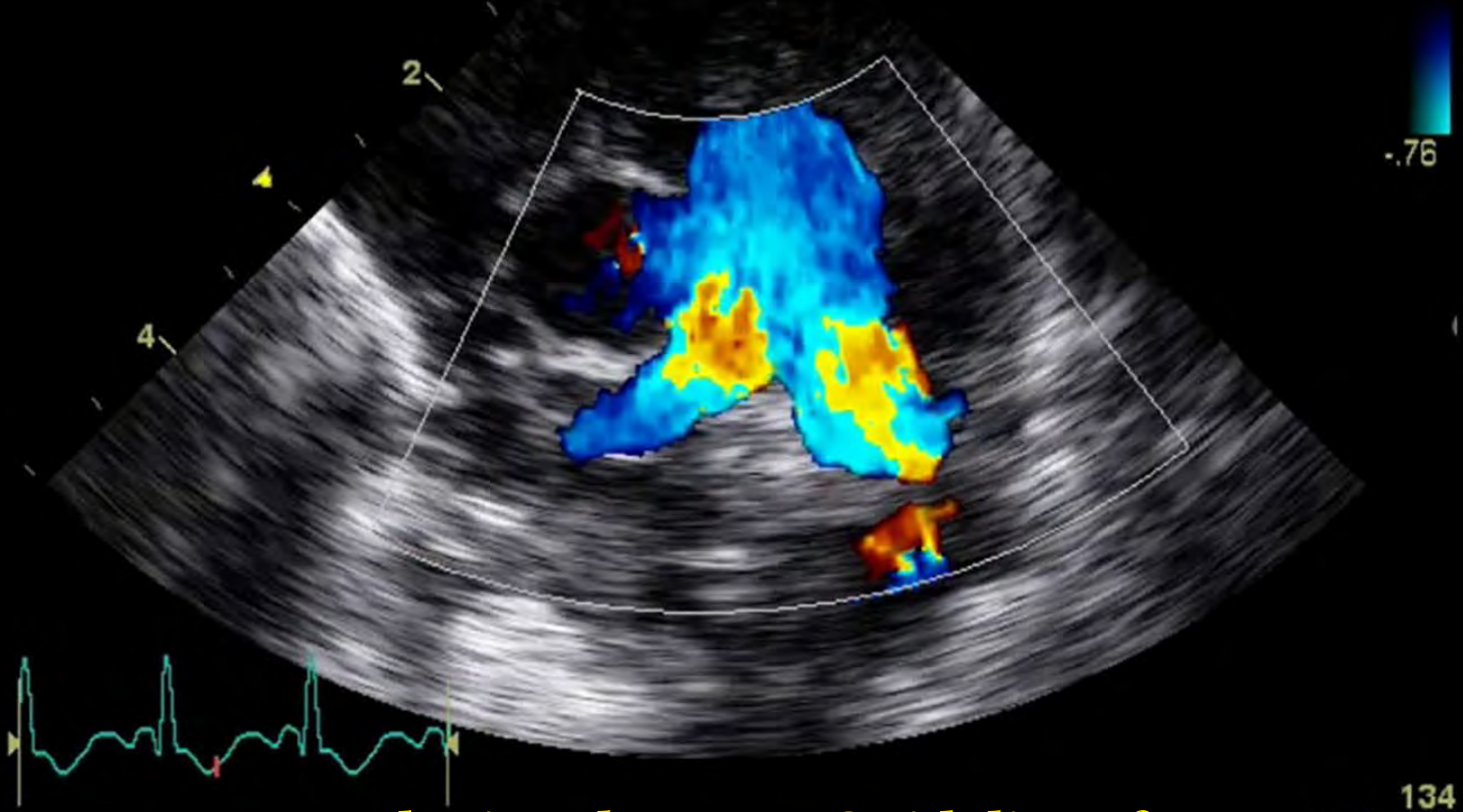
Throughout the document, differences between recommendations for the practice of adult echocardiography and those for pediatric and congenital echocardiography are highlighted.

Further, each section contains a summary of key points that will be helpful for readers to readily incorporate recommendations into practice.

Quality improvement (QI) is an arena that has rightly become an important focus for labs regardless of size or location, highlighting that it is important to not only apply these guidelines and recommendations but to measure how well we do it and what impact it has on patient care. This document reviews the increased application of QI methodology, providing a robust summary of methods of QI assessment in pediatric and congenital echocardiography and links to various quality metric tools.

In closing, the new ASE guidelines for the performance of a comprehensive pediatric transthoracic echocardiogram establish an organizational structure, a common language, and tools for evaluation of quality that can be used by any practice or center wishing to provide pediatric and congenital echocardiographic services.

(This table is from Guidelines for Performing a Comprehensive Pediatric Transthoracic Echocardiogram: Recommendations From the American Society of Echocardiography, published in the February 2024 *Journal of the American Society of Echocardiography*. Reprinted with permission from Elsevier Inc. on behalf of ASE.)



Introducing the 2024 Guidelines for Targeted Neonatal Echocardiography

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ver the past decade, admissions of sick neonates to the neonatal intensive care unit (NICU) have increased by over 35%. Many of these neonates are admitted with cardiorespiratory failure and face a high burden of mortality and long-term morbidity. Globally, since the publication of the inaugural American Society of Echocardiography (ASE) guidelines to guide the practice

of neonatologist performed targeted neonatal echocardiography (TNE)¹, knowledge of common neonatal hemodynamic disease states and the care of these critically ill neonates is now enhanced. The practice of TNE employs comprehensive functional and key structural echocardiography to identify hemodynamic derangement and guide the administration of intensive care therapies. Among these patients, the underlying hemodynamic problems may quickly change or evolve, and frequent longitudinal evaluations, often performed repeatedly over intervals of several hours, enhances clinical agility in the administration of cardiovascular

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therapeutics. Several landmark publications over the past 13 years have demonstrated enhanced patient outcomes with TNE-guided hemodynamic care.

Despite progress, there remains significant variability in practice; specifically, lack of standardization of cardiovascular imaging methods and analysis, and inconsistency in how clinicians understand and integrate disease-specific hemodynamic information into clinical decision making. The updated 2024 ASE guidelines², developed by an expert task force with representation from neonatology-hemodynamics, pediatric cardiology, pediatric cardiology sonographers and neonatology-cardiac point of care ultrasound (cPOCUS), provide recommendations for the rationale, indications, and standardized approach to TNE and cPOCUS evaluation, and competency-based training requirements. We anticipate that the updated guidelines will enable more institutions to establish either TNE or cPOCUS programs, foster hypothesis generating and testing TNE-based research and aid the establishment of new collaborations between neonatologists with a hemodynamic focus and pediatric cardiologists interested in non-congenital heart disease (CHD) neonatology disease.

Looking Back, Pushing Forward: Evolution and Importance of Neonatal Hemodynamics and Targeted Neonatal Echocardiography

Since the publication of the original guidelines for TNE in 2011, the field of neonatal hemodynamics

and TNE has experienced unprecedented growth in both clinical adoption and scientific advancement. TNE has, in neonatal intensive care units around the world, progressed from adjunct to an indispensable tool in the care of critically ill neonates.

Bedside use of echocardiography emerged as a clinical tool in the NICU, 20-30 years ago, by pioneering neonatologists seeking a tool that would provide on-demand critical hemodynamic information to improve intensive care decision-making. Invasive monitoring of pulmonary artery, vein, and left heart pressures among neonates is both infeasible and impractical, which traditionally relegated neonatologists to rely on inaccurate and unreliable radiographic and/or laboratory measures to 'guess' the nature and severity of hemodynamic derangement. Echocardiography in the hands of expert neonatologists has filled this important knowledge gap.

Despite the ongoing challenges of conducting reliable hemodynamic care, early use was viewed with concern by some neonatologists and pediatric cardiologists, due to ad hoc implementation, variability in image quality and a wide range of training and expertise. The inaugural (2011) guidelines sought to remedy unstandardized and poorly regulated use of TNE, by introducing neonatologists to core concepts in comprehensive echocardiography, providing guidance on clinical applicability, and broadly conceptualizing the scope and intensity of training programs. These original guidelines were forged to foster a safe, structured, and basic standardized approach to care in a field that had not yet

achieved universal acceptance or adoption. In contrast, the update guidelines detail the current high-level standards in this now mature and developed subspecialty. Targeted neonatal echocardiography is now commonly and seamlessly integrated into core clinical pathways, and competency-driven training programs are achieving national accreditation.

Targeted Neonatal Echocardiography in Clinical Practice: New Guidelines for Symptom-Based Indications and Special Populations

The most common indications for TNE include adjudication of hemodynamic significance of a patent ductus arteriosus, evaluation of acute and chronic pulmonary hypertension, evaluation of right and left ventricular systolic and/or diastolic function, and screening for pericardial effusions and/or malpositioned central catheters. While these disease-based indications are largely unchanged, the updated guidelines include new symptom-based indications (e.g. systemic hypotension, hypoxemia). The symptom-based approach will guide clinicians navigating the common clinical scenario of performing a hemodynamic assessment for neonates with undifferentiated critical illness, including recommendations for imaging protocols and principles of integration of echocardiography data into intensive care decision-making.

The guidelines also extend the indications for TNE to special patient populations who are considered at higher risk of hemo-

dynamic disturbance. Neonates born to mothers with poorly controlled diabetes mellitus (gestational or pre-gestational), mono-chorionic twin neonates exposed to intrauterine twin-twin transfusion and neonates with Down syndrome frequently experience a spectrum of hemodynamic complications. Guidance is provided on indications for hemodynamic evaluation, imaging techniques and hemodynamic care for these at-risk neonates.

Training Programs in Neonatal Hemodynamics and Targeted Neonatal Echocardiography

Training programs in TNE have evolved considerably over the past decade. This maturation is reflected in the guideline’s comprehensive, competency-based recommendations for training. There are several modifications in the updated guidelines, which enhance their general-

izability to training programs around the world and support high-quality TNE education.

While the guidelines continue to suggest that the duration of TNE training be a minimum of one year, the guidelines now recommend a competency-based, rather than exclusively fixed time-based training (e.g. one year), which mirrors similar broad developments across medical education. This will ensure that adjudication of successful completion of training is based on the competencies required

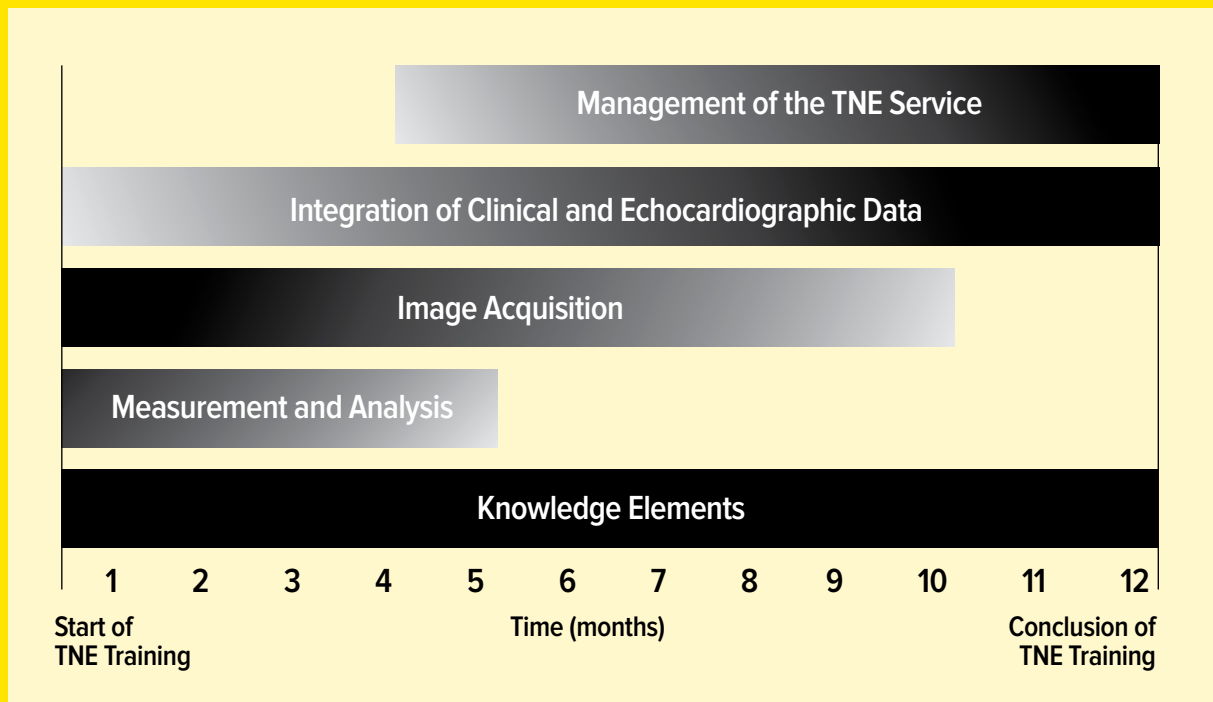


FIGURE 1: Depiction of the timing, trajectory, and intensity of training in the development of competency in performing the major tasks of the discipline of targeted neonatal echocardiography. The timing of greater intensity or focus of training is depicted by the shade of the horizontal bars. Darker areas of the bar correspond to the approximate period of increased time and greater intensity of training committed to development and acquisition of the competency. Lighter areas of a bar correspond to the timing of an increasing or decreasing emphasis on the task. The length of each bar depicts the timing and duration typically allocated to competency acquisition. For example, early training is dedicated predominantly to developing the skills for echocardiography analysis and image acquisition, with increasing emphasis on integration of clinical and echocardiography data in the latter two thirds of the training period.

(This Figure is Figure 27 from the Guidelines and Recommendations for Targeted Neonatal Echocardiography and Cardiac Point of Care Ultrasound in the Neonatal Intensive Care Unit: An Update from the American Society of Echocardiography, published in the February 2024 issue of the Journal of the American Society of Echocardiography. Reprinted with permission from Elsevier Inc. on behalf of ASE)

for clinical practice as a neonatologist with hemodynamic expertise. The guidelines specify the comprehensive knowledge elements and enabling competencies for practice in TNE, and competencies required for the provision of medical TNE consultation in the NICU. Programs and trainees should strive to facilitate the timely and complete acquisition of these competencies during the training year. [FIGURE 1] Training programs in TNE should develop a plan for objective learner assessment, including a combination of direct observation by experienced clinician allowing formative feedback, and documented examination of knowledge, image acquisition, image interpretation, measurement, and application skills.

The updated guidelines now recommend, but no longer mandate, a minimum training period in a pediatric echocardiography laboratory. Criticisms of the 2011 guidelines were that they restricted training to sites with pediatric echocardiography laboratories (echo-lab), and the extent of required echo-lab time (four to six months) was prohibitive in some programs due to the large number of learners they support. The former had wide implications for training neonatologists outside of North America where pediatric echocardiography services are regionally based and oftentimes geographically separate from NICUs. There is also recognition that the increasing use of TNE is driven, in part, by the now ubiquitous use of ultrasound in patient assessments both in the NICU and across medical specialties. Developing proficiency in cardiac ultrasound is now a necessary part of training in several adult specialties (e.g. cardiac anaesthesia, crit-

ical care, emergency care). While training in TNE is undertaken by a minority of neonatal practitioners, the broader adoption of ultrasound as a diagnostic tool in neonatal care highlights how TNE training has spread beyond what is learned in pediatric cardiology echocardiography labs.

The guidelines continue to recommend two to four months of training in a pediatric echo lab and emphasize the importance of exposure to patients with CHD. However, among training programs without direct access to an echo lab, a one-to-two-month elective rotation in an echo lab is suggested with a focus towards exposure of a variety of cases of CHD which will aid in recognition of deviation from normal anatomy.

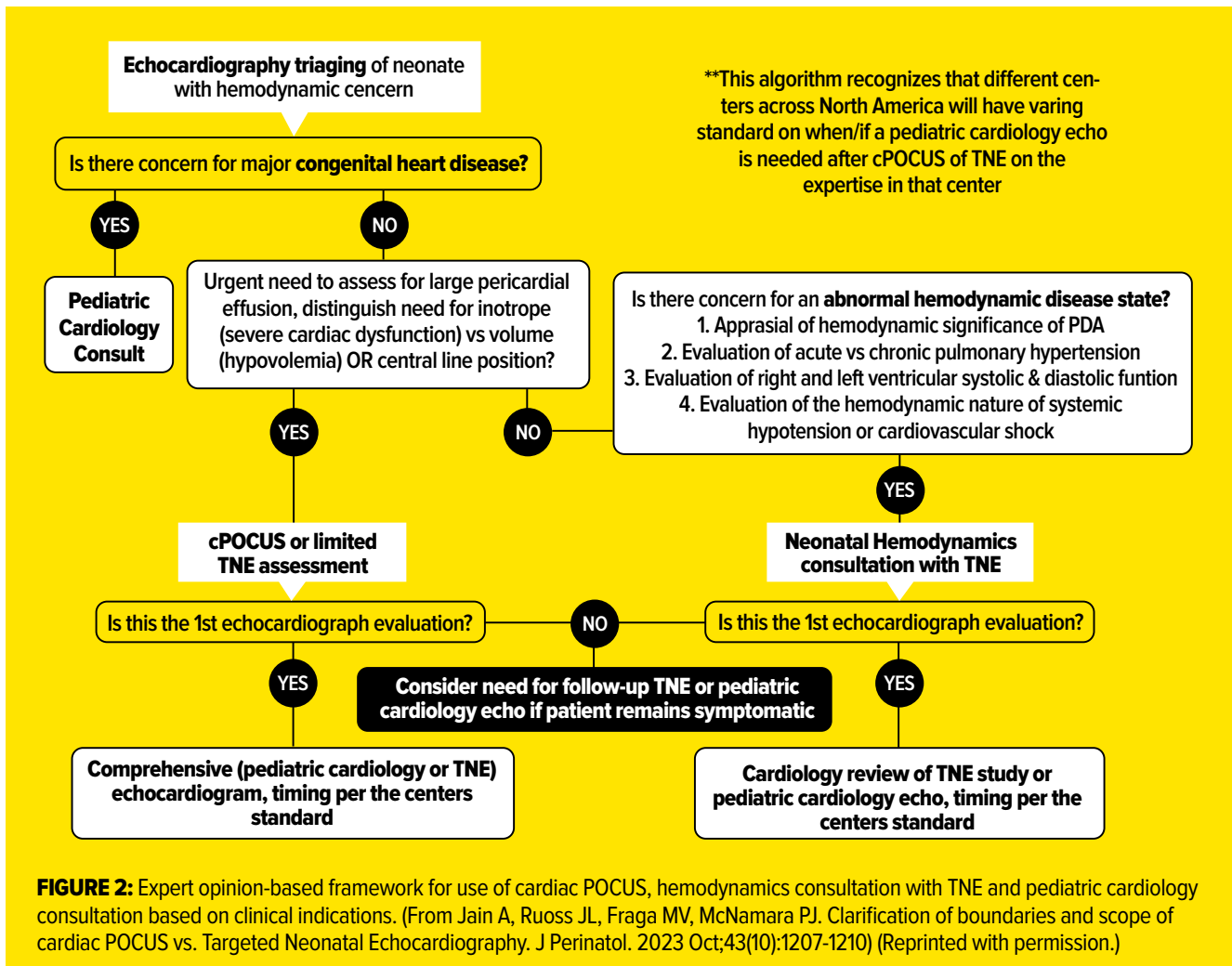
Another key recommendation is that neonatologists with advanced TNE training may perform the first study among neonates with a low index of suspicion of CHD. In contrast, the 2011 guidelines recommended the first study be conducted and/or reviewed by a pediatric cardiologist to avoid misdiagnosis of CHD. This updated approach aligns with published literature and enables timely access to comprehensive hemodynamic evaluation. However, the first neonatal echocardiogram should include the essential views and sweeps to enable a comprehensive anatomical and functional assessment and be performed by a sonographer with proficiency in screening for critical CHD. Although the study may be performed and interpreted preliminarily by a neonatologist with advanced TNE experience, it should also be reviewed by a pediatric cardiologist in a timely fashion (i.e., within 24 hours or a reasonable time frame based on local

standards). Centers without access to pediatric cardiology care are advised to implement mechanisms for establishing support for the review of neonates with suspected CHD, such as telemedicine.

Neonatal Cardiac Point of Care Ultrasound: Recommendations for Training and Clinical Practice

An important new recommendation in the guidelines is a distinction of the scope of cPOCUS in the NICU. cPOCUS has emerged as a broadly accessible and potentially useful tool in the NICU, but the complexities and pitfalls of echocardiography among critically ill neonates has culminated in uncertainty in the definition, utilization and training pathway for cPOCUS. [FIGURE 2]

A neonatologist-performed cPOCUS evaluation may include evaluation of central catheter tip location, identification of pericardial or pleural effusions, subjective (“eyeballing”) evaluation of inferior vena caval collapsibility as a surrogate of hypovolemia, and subjective evaluation of myocardial systolic performance. As with the recommendations for training in TNE, the guidelines recommend a competency-based approach to training in cPOCUS. Like TNE, training in cPOCUS requires comparable program infrastructure, including quality sonographic equipment, image archiving capability, administration, teaching, quality assurance, and methods for both formative and summative trainee evaluation. Overall, the guidelines offer a clear delineation of the unique indications and training requirements



for cPOCUS, as compared with TNE, which will provide guidance to Neonatology leaders considering establishing imaging-based programs in the NICU.

In summary, we anticipate that the updated guidelines will enable more institutions to establish either TNE and/or cPOCUS programs based on institutional needs, foster hypothesis generating and testing TNE-based research, and aid the establishment of new collaborations between neonatologists with a hemodynamic focus and pediatric cardiologists interested in non-CHD neonatology disease.

*Additional Guideline Writing Group members: Amish Jain, MD, PhD, FASE, Afif El-Khuffash, MB BCh, Regan Giesinger, MD, FASE, Lindsey Freud, MD, FASE, Philip T. Levy, MD, Shazia Bhombal, MD, Willem de Boode, MB BS, Tina Leone, MD, Bernadette Richards, RDCS, Yogen Singh, MB BCh, Jennifer M. Acevedo, ACS, John Simpson, MB BCh, FASE, Shahab Noori, MD, and Wyman W. Lai, MD, FASE

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of neonatal hemodynamics. Sadly, Dr. Giesinger passed away shortly before the publication of this guideline.

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