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UPDATE

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FALL 2025: **POCUS**

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Expert Faculty, Engaged Learners: A Weekend of Immersive POCUS Training

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Dr. Melissa Byrne

In early September, I joined an excellent faculty team to teach at the VSA's point-of-care ultrasound (PoCUS) course in Richmond, Virginia. Throughout the two-day course, the energy in the room was contagious — participants were fully engaged, eager to scan, and quick to connect imaging findings with real-world practice. With hands-on scanning combined with didactic sessions, questions flowed naturally, probes were constantly in motion, and each station buzzed with curiosity and collaboration. Having taught at numerous PoCUS courses nationwide, the high faculty-to-learner ratio provided ample opportunities for participants to enhance their skills across various models and instructors.

The course covered a meaningful range of applications tailored for anesthesiologists. We started with gastric ultrasound, reviewing the essentials of assessing gastric contents and aspiration risk. Then, we

Continued on page 5

Feature Article

Gastric POCUS

By Christina Jardak, MD
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Dr. Christina Jardak

Point of care ultrasound, or POCUS, has become a "hot topic" in medicine, and anesthesiology is no exception. But the utility and opportunity for enhanced patient safety and sound perioperative decision-making transcends academic trends or "en vogue" techniques. There is growing clinical evidence regarding the efficacy, safety, and value of POCUS in perioperative spaces, especially as access (and affordability) continues to grow. This article describes and focuses on gastric ultrasound and its role within the anesthesiologist's toolbox in perioperative management.

Generally speaking, POCUS is the real-time utilization of ultrasound to quickly receive imaging information that guides medical diagnoses, interventions, and procedures. As both an imaging and diagnostic modality, ultrasound technology has demonstrated reduced cost and greater sensitivity and specificity than many other techniques, besides evaluation techniques or modalities.

Gastric ultrasound, through measurement of the cross-sectional area of the gastric antrum, allows for accurate assessment of the gastric volume of a given patient; this can be performed in either the supine or right lateral decubitus position (with the right lateral decubitus position being of value

Continued on page 5

Inside This Edition:

POCUS

vsa virginia society of anesthesiologists UPDATE

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The ***VSA Update*** newsletter is the publication of the Virginia Society of Anesthesiologists, Inc. It is published quarterly. The VSA encourages physicians to submit announcements of changes in professional status including name changes, mergers, retirements, and additions to their groups, as well as notices of illness or death. Anecdotes of experiences with carriers, hospital administration, patient complaints, or risk management issues may be useful to share with your colleagues. Editorial comment in italics may, on occasion, accompany articles. Letters to the editor, news and comments are welcome and should be directed to: Brooke Trainer, MD • brooke@vsahq.org.

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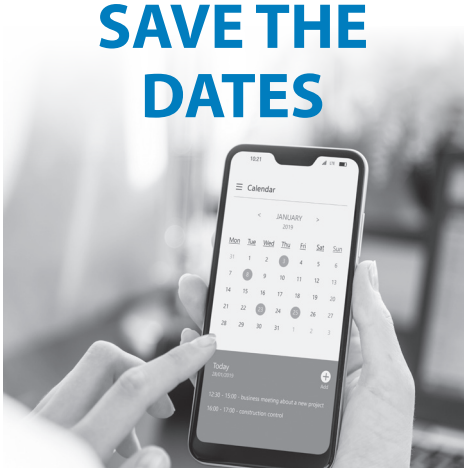

Annual Membership Business Meeting

January 26, 2026

Lobby Day

January 27, 2026

Information, as it becomes available, can be found on the VSA website at vsahq.org.

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Your contributions make a difference!

No gift is too small and together, we can make a difference in the healthcare of all Virginians.

President's Message

Advocacy in Action: VSA Launches 882 Campaign to Defend Physician-Led Anesthesia Care

By Casey Dowling, DO
Winchester Anesthesia
VSA President

Dr. Casey Dowling

Imagine walking into the OR tomorrow—and discovering that the rules for patient safety has suddenly changed.

This isn't a hypothetical situation. It's a battle currently playing out in Richmond.

At the Virginia Society of Anesthesiologists (VSA), advocacy is not an afterthought—it's a core mission. And in 2025, our collective voice made a real impact during the Virginia General Assembly session.

We're proud to share two significant victories for patient safety and physician-led care:

A Major Legislative Win: Senate Bill 882

Governor Glenn Youngkin signed Senate Bill 882 into law, officially welcoming Certified Anesthesiologist Assistants (CAAs) into Virginia's team-based model of anesthesia care.

This important legislation:

- Expands access to high-quality anesthesia care across the Commonwealth
- Strengthens our team-based approach to care
- Eases the burden on an increasingly strained anesthesia workforce

A Dangerous Bill Stopped in Its Tracks

We also successfully defeated a bill that would have removed physicians from the anesthesia care team entirely—a move that would directly threaten patient safety.

Please note, these victories occurred despite being outspent by opposing interests four to one.

But make no mistake, this fight is far from over.

Those working to dismantle the physician-led model are not going away. That's why we're launching the 882 Campaign.

To prepare for the next round of advocacy battles, we're asking VSA members to contribute $882.

Your gift will help us:

- Defend physician-led anesthesia care
- Support pro-patient lawmakers
- Secure the future of our profession

With every seat in the Virginia General Assembly up for election this November, your contribution couldn't be more critical.

Advocacy Isn't All We Do

While advocacy is essential, it's only part of our mission. The VSA is equally committed to education and professional development.

Earlier this month, we hosted our Second POCUS Conference, held September 13–14 in Richmond. This event provided

- Hands-on learning in the fast-growing field of point-of-care ultrasound
- CME credits that count toward the ASA's Diagnostic POCUS Certificate Program

It's a major achievement for a state society—and a testament to the strength of our community.

Stand With the VSA

We are stronger when we stand together—and stronger still when we invest in the future of our profession.

Point-of-Care Ultrasound: Elevating Our Practice and Protecting Our Patients

By Brooke Trainer, MD, FASA
Editor, Virginia Society of Anesthesiologists Newsletter


Dr. Brooke Albright-Trainer

Point-of-care ultrasound (POCUS) has rapidly evolved from an optional skill to an essential extension of the anesthesiologist's clinical toolkit.

In today's perioperative landscape—especially with the widespread use of GLP-1 inhibitors and other emerging obesity medications—assessing aspiration risk has never been more important. With a quick bedside gastric ultrasound, we can estimate gastric volume and help decide whether it is truly safe to proceed or whether additional precautions are warranted.

POCUS is equally transformative in hemodynamic management. Many of our sickest patients—those with heart failure, sepsis, liver failure, renal failure, or severe comorbidities—present with volume status that is notoriously difficult to assess. Yet in the operating room, decisions about fluid resuscitation versus vasopressor support can have profound consequences.

A focused cardiac or IVC scan can reveal whether hypotension after induction is anesthetic-related, fluid-responsive, or truly distributive shock. This matters even in seemingly "short" or routine cases. We now understand the real risks of overhydration: worsened pulmonary outcomes, delayed recovery, and increased complications in high-risk patients. The ability to personalize fluid and vasoactive therapy in real time can change outcomes—and, in some cases, save a life.

Beyond its clinical value, mastering POCUS reinforces what makes physician anesthesiologists distinct. The depth of our training, our ability to integrate physiology with imaging, and our leadership in complex perioperative care set us apart from non-physician providers. Becoming proficient in POCUS is one more way to differentiate ourselves, demonstrate advanced expertise, and provide safer, more individualized care.

"Beyond its clinical value, mastering POCUS reinforces what makes physician anesthesiologists distinct. The depth of our training, our ability to integrate physiology with imaging, and our leadership in complex perioperative care set us apart from non-physician providers."

This special issue of the Virginia Society of Anesthesiologists Newsletter is dedicated to POCUS in anesthesiology. I am grateful to the outstanding contributors who have shared their insights, techniques, and cases to help us all sharpen this skill. I also want to extend a heartfelt thank-you to everyone who participated in the VSA's 2nd POCUS Workshop, held earlier this September at the Delta Hotel. The turnout was fantastic, the instructors were phenomenal, our volunteer students were patient and flexible, the sponsors were thoughtful and accommodating, and the meeting planners demonstrated exceptional professionalism and organization. Events like this highlight the strength of our community and our shared commitment to advancing patient care.

I encourage each of you to invest time in learning and refining your POCUS skills. Start with simple gastric and cardiac assessments, practice frequently, and aim for mastery. This is more than a technical tool—it's an opportunity to elevate your practice, improve patient outcomes, and lead the future of our specialty.

See pictures from VSA's September POCUS Workshop in the online edition of the *VSA Update*!

Immersive POCUS Training, *from page 1*

moved on to the FAST exam, highlighting its role in perioperative and trauma care. Lung ultrasound sessions emphasized the rapid diagnosis of pneumothorax, pleural effusion, and pulmonary edema, while focused cardiac echocardiography provided participants with tools to quickly evaluate ventricular function and volume status. Real-life case scenarios aimed to integrate ultrasound skills that can be immediately applied in clinical practice.

Our faculty team, comprised of experienced clinician-educators from across Virginia and representing various sub-specialties, created an environment that blended expertise with approachability. Their ability to simplify complex imaging concepts into practical, clinically relevant teaching points made each session memorable and impactful.

On the final day of the course, participants had the chance to log cases toward the ASA Diagnostic PoCUS Certificate, demonstrating the VSA's commitment not only to education but also to developing long-term skills for its members.

The weekend was a lively reminder of how engaged learners and dedicated faculty are advancing anesthesiology through PoCUS. The enthusiasm in every session underscored that PoCUS is more than just a tool — it's a practice-changing approach to patient care. I encourage you to join the VSA at the next PoCUS course.

Gastric POCUS, *from page 1*

through the facilitation of gastric contents through the antrum). The volume of gastric contents (in milliliters) can be estimated by the following: 27 + (14.6 * CSA) – (1.28 * age), where CSA equals the cross-sectional area. Gastric volumes less than 1.5mL/kg are generally treated as normal, given this value's consistency with baseline secretions in the setting of clear liquids. Through evaluation of the appearance of gastric contents (i.e. echogenicity, heterogeneity, or other identifying traits), the quality of gastric contents (solid, clear liquids, thick or "full" liquids) can be further delineated and help guide perioperative decision-making.

With mastery and application of point of care gastric ultrasound, this technique allows for expeditious determination of aspiration risk. Given that aspiration accounts for up to nine percent of anesthetic deaths, a four-fold increase in intensive care unit admissions, and a 7.6% increase in hospital mortality through the development of aspiration pneumonia, this presents an opportunity to mitigate significant patient harm, reduce case cancellations, and overall operative room (and by extension) hospital costs. The current mainstay and method of decreasing aspiration risk is via standardized fasting guidelines; however, current ASA guidelines were generally intended for healthy patients undergoing elective procedures. Generally speaking, these guidelines do not typically pertain to emergent cases, where the relative luxury of case postponement or cancellation may not be feasible. In patients with an unclear fasting status, this is particularly exacerbated in those with altered mental status, cognitive impairment, or language barriers.

In a similar vein, certain high-risk patient populations, including those with diabetes, gastrointestinal reflux disease, obesity, pregnancy, or opioid use may have a higher likelihood of retained gastric contents, even when compliant with standard fasting protocols. Beyond these demographics, an additional sub-sect of patients is of particular relevancy–patients prescribed glucagon-peptide-1 receptor agonists, or GLP-1s. A modern bedrock of medical management in diabetes mellitus and obesity, this drug class has become and continues to be a growing presence in the perioperative space. Growing bodies of research indicate that GLP-1's will likely transcend these patient populations, with promise in addressing kidney disease, liver disease, certain obesity-related cancers, and neurodegenerative disease.

While brief, this article hopes to highlight the value and relevancy of gastric ultrasound in perioperative management. Through standardized instruction of gastric ultrasound technique and mastery, both current anesthesiologists and anesthesiology trainees will benefit and be of better service to Virginians and beyond.

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Letter to the Editor – Response to Concerns

By Mark Nelson, MD
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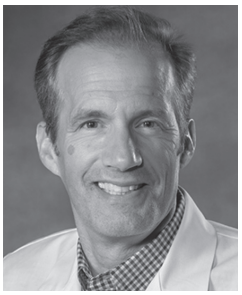
Dr. Mark Nelson

We appreciate the cogent letter to the editor by Dr. Sweitzer which appeared in the 2025 Spring issue of the VSA Newsletter[1] regarding the Winter 2025 VSA article by Nelson[2] (Winter VSA Article) on the ASA's Perioperative Cardiac Implantable Electronic Device Management Aid[3] (ASA Management Aid).

The concerns will be addressed in the order they appeared in the letter and will reference the ASA Management Aid.

The first area has to do with pacemaker (PM) responses to magnets. In the current era, PM magnet response has become increasingly standardized. Modern PMs revert to asynchronous pacing when a magnet is placed over them almost uniformly with the exceptions noted in the ASA Management Aid and the Winter VSA Article.

These exceptions include that some Biotronik PMs can be left in "Auto Mode" at the time of implantation. In this mode, the PM will pace ten beats asynchronously at 90bpm then revert to synchronous pacing at the device's lower limit.

This is detectable by placing a magnet on the device and observing the response. If the Biotronik PM is programmed in auto mode, the device will need to be reprogrammed for patients undergoing surgery utilizing electrocautery who have high pacing requirements.

The second exception discussed in the ASA Management Aid and in the Winter VSA Article is that some Boston Scientific PMs have a magnet response programming option whereby the device stores an electromyogram (EMG) with magnet placement.

In this mode, the magnet will have to be removed for three seconds and replaced again to activate asynchronous pacing. This programming is exceedingly rare in the modern era.

When utilizing a magnet to induce asynchronous pacing, the ECG monitor should always be observed for continuous asynchronous pacing at the device magnet response rate. Lastly, the Medtronic Micra, a leadless PM, does not have a magnet response at all. For patients with a high pacing requirement, this device will also need to be reprogrammed for surgeries involving electrocautery above the umbilicus. These exceptions are further detailed in the ASA Management Aid.

Dr. Sweitzer notes that the Winter VSA article did not include management of ICDs with active pacing. All ICDs with or without active pacing respond to magnet placement with suspension of tachytherapies. This becomes an issue for patients with ICDs that are actively pacing at the time of surgery.

In this case, the Management Aid recommends that the underlying intrinsic rate be determined by a current or recent device interrogation. If the underlying HR>45bpm, surgery can proceed safely utilizing magnet placement to suspend tachytherapies. If <45bpm, the ASA Management Aid suggests reprogramming the CIED tachytherapies off and to activate asynchronous pacing to avoid inhibition of pacing with electrocautery use. In this case, a defibrillator must be applied as the device will no longer sense tachyarrhythmias.

Dr. Sweitzer also brings to light a concern that with emergency surgery, a CIED could have no magnet response because it was previously programmed in a protective mode such as "Electrocautery Protection Mode" (Boston Scientific). There are other similar protective modes such as "MRI protection mode" (Boston Scientific) and "Sure scan" an MRI protective mode utilized by Medtronic.

In these modes, the device will not have a magnet response. These modes are programmed for either surgeries involving electrocautery near the device in PM dependent patients or in anticipation of an MRI as suggested by their titles and are otherwise not utilized. In these modes, ICD tachytherapies are inactivated, and PMs are programmed asynchronous (in PM dependent patients) or OFF (no pacing in non-PM dependent patients). If the patient's device was unknowingly (or even knowingly) programmed in this manner, surgery can proceed safely without risk of inappropriate tachytherapies or inhibition of pacing since that is the purpose of programming modalities. An external defibrillator must be attached to the patient if the tachytherapies are disabled in these protective programs.

Dr. Sweitzer also notes that for patients with a subcutaneous ICD (SICD), disabling the tachytherapies should occur for surgeries above the groin rather than the above umbilicus, referencing a case report by McFaul et al.[4] as well as the ACC/AHA guideline recommendation which references the same case report[5].

This case report, however, describes unexpected shocks from an SICD during a heart transplant after attempted device reprogramming with a defective programmer and subsequent mispositioning of a magnet on the device. The reference is assumed in error, and we look forward to reviewing the correct reference.

The ASA Practice Aid advises ICD tachytherapies inactivation (by reprogramming or magnet placement) for procedures utilizing electrosurgery <15 cm from the device which would be above the groin for patients with an SICD.

Dr. Sweitzer comments on the need for CIED interrogation after procedures involving electrosurgy. Most patients have remote (home) monitoring which utilizes the patient's cell phone or a free-standing monitor to interrogate the patient's device daily.

For patients with remote monitoring, device interrogation prior to discharge from a monitored area is unwarranted unless the following has occurred: cardioversion, trauma to the chest, mechanical lead disruption, radiofrequency ablation, therapeutic ionizing radiation, or the device was reprogrammed prior to surgery.

Patients without remote monitoring can also be safely discharged to an unmonitored environment provided that their procedure did not involve any of these treatment modalities and that they follow-up with their cardiologist or device clinic within 30 days.

Lastly, Dr. Sweitzer proposes that anesthesiologist utilize the patient's own ICD to treat unstable perioperative tachyarrhythmias. There are several reasons why this is not recommended in the ASA Management Aid. ICD programming is increasingly tailored to each patient's preferences and pathology.

Many factors are considered that are

Continued on page 7

beyond the scope of this paper, including stability of the patient's tachyarrhythmia, duration or self-terminating arrhythmia qualities, presence of different or confounding arrhythmias, and arrhythmia rates which are tolerated differently depending on patient pathologies and comorbidities.

All ICDs do not deliver tachytherapies at the same heart rate, nor do they necessarily provide shocks as an initial treatment. Shocks are generally programmed as a last resort if other less invasive therapies (described below) are deemed efficacious. Using an automotive analogy, shocks are like an airbag in a car; its deployment is a last resort utilized only in life-threatening collisions. High voltage ICD therapy use is reserved in a similar manner as it's use is not a benign event.

ICDs are programmed to avoid unnecessary shocks as shocks are traumatic for patients and are associated with increased morbidity and mortality.[6] Electrophysiologist often utilize other therapies which may be less effective but are less invasive as compared to shocks. Antitachycardia pacing (ATP) and exploiting delays in ICD therapies for patients with self-limiting tachyarrhythmias are examples.

ICDs can be programmed with multiple rounds of ATP and extensive time delays in delivering therapy for patients who experience stable ventricular tachycardia (VT). However, the same patient's hemodynamic response may vary significantly while undergoing surgery with anesthesia.

Volume derangements, electrolyte abnormalities, anemia, vasodilatation, all coupled with the effects of the anesthetic itself can have profound effects on hemodynamics in any patient; more so on the stability of patients with cardiomyopathies experiencing VT. The same patient who experiences stable VT while awake and in their usual state may experience profound instability with VT during surgery and under anesthesia.

In these instances, waiting for the ICD to provide appropriate therapies is unwarranted. Prompt high-voltage therapy is indicated and should be administered immediately via an external defibrillator. The efficacy of ATP in patients experiencing malignant tachyarrhythmias during surgery with anesthesia has not been studied and is unknown and ATP is not recommended in ACLS protocols.

Moreover, intraoperative tachyarrhythmias and codes can be exacerbated by alterations in volume status, with hypovolemia a common occurrence altering the hearts responsiveness to ATP. ATP and programmed tachytherapies delays are only deleterious in unstable or coding perioperative patients. There is little benefit in avoiding shocks in these situations as would be the case for awake patients experiencing a stable tachyarrhythmia.

Depending on an ICD to shock in the OR has other logistic limitations as well. A case report by Nelson et al.[7] describes a patient with an ICD, cardiomyopathy and low ejection fraction undergoing a TAVR procedure utilizing rapid pacing (180bpm). Following deployment of the aortic valve, VT ensued at 159bpm. The perioperative team removed the magnet from the ICD in anticipating appropriate therapy.

After a period, it was recognized that the device was not going to deliver any antitachycardia therapies and an emergent external shock was hastily called for which resulted in an R on T and ventricular fibrillation (VF). Subsequently the ICD shocked the VF back to sinus rhythm and the patient was thereafter successfully resuscitated.

This patient with aortic stenosis and cardiomyopathy with low ejection fraction tolerated VT after rapid pacing and valve deployment poorly while the providers wishfully waited for the ICD to provide therapy. Post operative interrogation of the device revealed the lower rate therapy zone was 162bpm and thus no shock was delivered at a 159bpm. Even if the providers had known the device therapy zone was 162bpm, the rate of 159bpm would have likely been indiscernible due to the criticality of situation described.

There are many other situations when relying on the ICD as opposed to following ACLS protocols can be deleterious. During a code with chest compressions, difficulty could arise when determining whether an ICD had provided shocks. Multiple rounds of ATP could easily confuse providers, appearing as a PM mediated tachycardia or another arrhythmia. ACLS protocols do not include utilizing an ICD for therapies. In the worst scenario, the device may be misidentified as an ICD during the haste and urgency of an intraoperative code when it was a PM.

Dr. Sweitzer suggests that lack of familiarity with ACLS protocols may be a reason for relying on ICDs to treat perioperative tachyarrhythmias. In the author's institution and in many others that the author is familiar with, ACLS or its equivalent certification is required for all anesthesiology faculty.

Any patient, including those without ICDs, may require management of malignant tachyarrhythmias. Anesthesiologists are the final barrier preventing the patient from harm in these situations and it is paramount that we do not abdicate this responsibility.

Lastly, suggesting that anesthesiologist plan to intervene after determining whether the device will provide tachyarrhythmia therapy may be an error-prone strategy. Human factors engineering has demonstrated the presence of unconscious overdependency on automation processes when they are available.

The Federal Aviation Administration encountered this very phenomenon with commercial pilots becoming overdependent on automation and becoming unable to manually fly the airplane in cases of instrument failure or inadequacy.[8]

Approaching the perioperative environment with an assumption that the ICD will treat malignant arrhythmias could produce similar overdependencies and failed rescues. The carte blanch recommendation to rely on the ICD during intraoperative arrhythmias should be avoided.

Finally, Dr. Sweitzer comments that internal shocks avoid damaging the CIED. External shocks should not damage the device provided that the pads are not placed directly over it. External shocks are routinely utilized in the author's institution as well as most others for cardioversions in patients with CIEDs.

In conclusion, we hope this manuscript has provided clarity to the concerns brought forward in the 2025 Spring VSA Newsletter article by Dr. Sweitzer. We would also like to note that the ASA Management Aid is now available as an app. (Rhythm Management LLC, Beaverdam VA) through the IOS App Store and Google Play Store under "Periop Pacemaker". The app was reviewed by the ASA Cardiovascular and Thoracic Committee prior to its release.

1. Sweitzer BJ. Concerns Regarding Cardiac Implantable Electronic device Ar-

Continued on page 9

Practical Use of Artificial Intelligence in Point of Care Ultrasound

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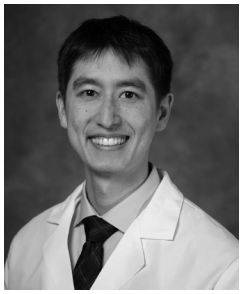
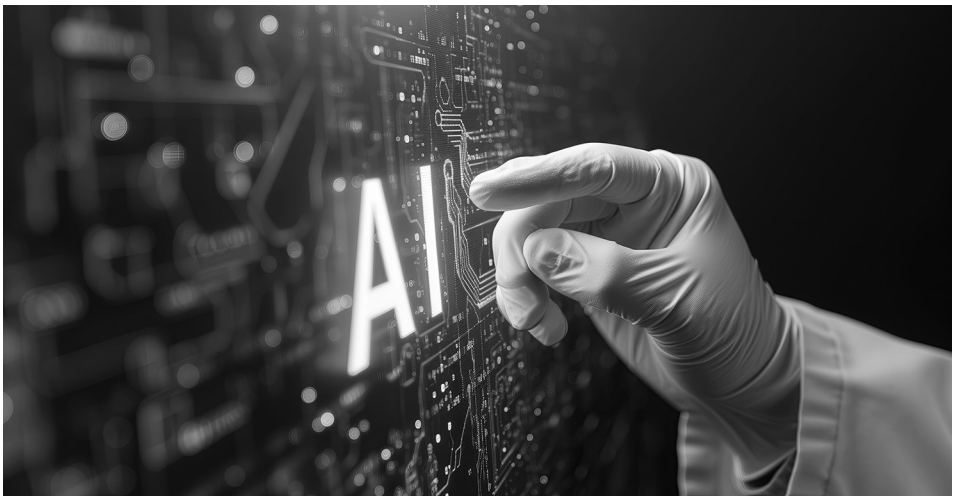


Dr. Justin Genova



The use of point-of-care ultrasound (POCUS) has grown significantly over the past decade as the need for diagnostic testing has increased. It provides a more cost-effective way to diagnose both chronic and acute conditions and enables real-time assessment of pathology, which can assist in managing patient deterioration.

This can be performed at the bedside with minimal risk to the patient. However, the effectiveness of this assessment relies heavily on the quality of images obtained, the ultrasonographer's skill, and the ability to interpret the data collected. Relevant clinical results, such as left ventricular ejection fraction (LVEF) or inferior vena cava (IVC) collapsibility, are often estimated due to time constraints or ease of measurement. In this context, artificial intelligence (AI) can serve as a tool to improve patient care by reducing variability among providers and speeding up data processing.

AI use in POCUS stems from advances in deep learning, which involves training a computer to perform tasks by analyzing patterns in data rather than through direct programming.[1] For example, deep learning applications in breast ultrasound have shown improvements in image quality and helped diagnose breast lesions.[1]

An ideal model that provides immediate analysis and feedback could improve care quality in various settings, including emergency care, perioperative management, and medical education. AI models applied to ultrasound could allow for quicker detection of pathology in cardiopulmonary, abdominal, or other bedside diagnostic exams.

> *These studies highlight how AI in POCUS training may serve as an alternative method for instruction and feedback when POCUS experts are not readily available.*

Automated image interpretation and the identification of sub-optimal images could also assist medical students, residents, and learners in ultrasound by offering instant feedback for diagnosis and supporting better image acquisition.

For less experienced clinicians, acquiring ultrasound images can be challenging, and success rates vary widely among users. On-screen AI-enhanced images can guide probe manipulation to improve image quality. Compared to instructor guidance, AI-assisted ultrasound users achieved higher assessment scores when obtaining apical 4-chamber and 5-chamber views (88% vs 76%, respectively).[2]

In another study, trainees with limited ultrasound experience were randomized to use a POCUS device with or without AI functionality, and the AI group showed faster scan times (57s vs 85s) and higher image quality scores.[3] The AI group also performed better at identifying reduced systolic function on a post-assessment quiz (85% vs 50%) and demonstrated increased device use.[3]

A preliminary study on urinary system imaging found that inexperienced ultrasound trainees could obtain clinically valuable images 90.6% of the time, compared to 98.6% by an experienced radiologist.[4] These studies highlight how AI in POCUS training may serve as an alternative method for instruction and feedback when POCUS experts are not readily available.

With more opportunities for feedback, trainees will become more comfortable using ultrasound, capturing relevant images, and evaluating their own scans.

Additionally, currently available commercial AI models can analyze images and immediately generate results such as velocity time integral (VTI), IVC collapsibility index, and LVEF.[5] Without AI, these measurements may be time-consuming, potentially leading to underutilization.

For example, the Simpson's method for LVEF requires manual tracing of the left ventricle in systole and diastole in two different views, VTI requires flow velocity measurement through the left ventricular outflow track in addition to the measurements of its diameter, and IVC collapsibility requires measurement of minimal IVC size during inspiration divided by maximal IVC size. Because these measurements require time to perform, AI can analyze images

Continued on page 9

AI in POCUS, *from page 8*

and automatically perform measurements, allowing for the immediate display of calculations that can further aid in hemodynamic and diagnostic assessment.

A validation study of high-quality images yielded significant agreement between the AI tools and an expert operator certified by the National Board of Echocardiography.[5] However, accuracy within this study could not be determined with a lower LVEF due to the study cohort sample size, and further validation studies are needed.[5]

AI has also been integrated within some ultrasound systems to detect B-lines, enabling the differentiation of healthy individuals from those with pulmonary edema.

With the ability to obtain quality images, this technology can also label the pleural line, detect the acoustic shadow of ribs, and calculate the number of B-lines.[6] Other systems work to use AI to aid in needle navigation by providing feedback on the depth of the needle, recommending movements to help visualize the needle on the screen, and displaying the trajectory and depth.[6]

Because AI has advanced rapidly and provides immediate results from data that is not always clear, it's understandable that many healthcare professionals view AI training, education, and clinical validation as significant barriers to its adoption in healthcare.[7] AI has great potential to improve patient care and education.

However, to use AI responsibly, it is crucial to understand its mechanisms, continue conducting studies to validate outcomes, and apply clinical judgment when deploying AI systems.

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Disclosures

Mark Nelson is the Medical Director of Rhythm Management LLC.

Bringing POCUS Beyond Borders

Virginia Commonwealth University Department of Anesthesiology Leads International Ultrasound Training Initiative

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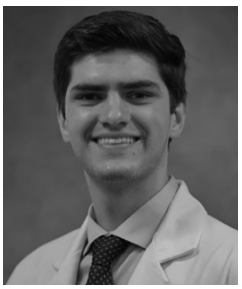

Dr. Taylor Lonjin

Dr. Olga Suarez-Winowiski

Point-of-care ultrasound (POCUS) has emerged as a transformative tool in the practice of modern anesthesiology. From guiding central line placement to assessing volume status and diagnosing cardio-pulmonary pathology, the utility of ultrasound at the bedside is now well-established.

As the field continues to evolve, so too must our commitment to ensuring that this technology is accessible, and teachable, across international and resource-limited settings.

In response to this global need, anesthesiologists from Virginia Commonwealth University (VCU) Department of Anesthesiology have developed and implemented a structured POCUS training program designed specifically for international anesthesiologists and anesthesia residents. The program, which welcomes physicians and residents from the Universidad Autonoma del Estado de Mexico in the Toluca, Mexico, aims to strengthen procedural skills, improve diagnostic accuracy, and empower participants to bring ultrasound education back to their home institutions.

Building the Case for Global POCUS Training

The rationale for this initiative is supported by a growing body of literature. A study evaluated the effectiveness of a POCUS curriculum delivered by medical students to healthcare providers in rural Indonesia.[1]

The results were striking; after a brief, focused training session, physicians, nurses, and midwives demonstrated significantly improved knowledge and comfort with ultrasound use. This study reinforces the idea that well-designed, short-duration educational interventions can have long-lasting clinical impact, especially when tailored to local needs.

Our program adopts a similar approach, emphasizing hands-on instruction and context-specific applications of POCUS in perioperative and critical care settings. Training sessions are delivered by anesthesiology faculty and residents, with a strong emphasis on reproducibility and sustainability.

The training session commences over the weekend and provides structured, hands-on instruction in essential clinical skills, including cardiac and pulmonary examinations, upper and lower extremity nerve blocks, and central venous catheterization. Participants rotate through designated stations, where they engage in supervised practice and receive targeted feedback to enhance their proficiency in each technique.

The goal is not just to teach ultrasound skills but to prepare participants to serve as educators themselves upon returning to the surrounding hospitals.

Teaching Through Collaboration: The Power of Peer Instruction

One of the most innovative aspects of our program is the integration of peer and near-peer teaching models. Following a similar structure as seen in a study which demonstrated that medical student instructors could effectively teach musculoskeletal ultrasound, our curriculum relies heavily on a layered teaching approach.[2] Faculty and residents lead small group sessions, fostering a culture of shared learning and mentorship.

This model not only scales well for larger groups but also builds confidence among both learners and teachers. A 2018 study highlighted that interprofessional ultrasound education, teaching relationships between sonography students and internal medicine residents resulted in significant skill gains and increased confidence.[3] Our program echoes these findings, promoting collaboration across disciplines and levels of training.

By leveraging the enthusiasm and expertise of anesthesiology trainees, we are able to deliver high-quality instruction that resonates with international residents and adapts to their specific clinical environments. These partnerships also provide a unique opportunity for VCU's residents to refine their teaching skills, explore global health, and engage in cross-cultural exchange.

Creating a Sustainable Educational Impact

Perhaps the most rewarding aspect of this initiative is witnessing its impact beyond the training sessions themselves. Many of the participating international residents return to their institutions and begin teaching POCUS to their own colleagues and trainees. Some have integrated POCUS into their residency curricula. This ripple effect is a testament to the value of equipping providers not just with tools, but with the confidence and knowledge to share them.

The program continues to evolve. Feedback from participants is regularly incorporated to refine content, improve delivery, and ensure clinical relevance. Topics such as cardiac ultrasound, pulmonary ultrasound, inferior vena cava assessment, and procedural guidance are emphasized based on the needs of the learners and the resources available at their home institutions.

As anesthesiologists in Virginia, we are proud to contribute to a growing global community of ultrasound-competent providers. Our work underscores the role of medicine not only in advancing and clinical care but also in building bridges that span continents.

Looking Ahead

As POCUS continues to reshape medicine, programs like ours highlight the opportunity for anesthesiologists to lead the way in global health education. Through innovation, collaboration, and a shared commitment to improving patient care, we can ensure that this technology reaches providers, and patients, who stand to benefit the most.

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Continued on page 11

Legislative Update

By Lauren Schmitt
Commonwealth Strategy Group

Virginia is in full campaign mode right now with the November 4th elections rapidly approaching. Former U.S. Representative Abigail Spanberger is the Democratic nominee and current Lt. Governor Winsome Earle Sears is the Republican nominee. This election is historic because the winning candidate will be the first woman Governor of Virginia.

For the Lt. Governor race, current Virginia Senator Ghazala Hashmi is the Democratic nominee and radio host John Reid is the Republican nominee. Current Attorney General Jason Miyares (Republican) is running for re-election against former Delegate Jay Jones (Democrat).

Current polls show the Democrats in the lead, with some polls showing Spanberger leading Sears by 12 points. One thing to keep in mind is that Senator Ghazala Hashmi serves as the Chair of the Senate Education and Health committee and has been supportive of physician-led health care. If she is elected Lt. Governor, a new Senator will be appointed Chair of the Education and Health committee. This directly impacts us, as the majority of bills related to anesthesia are heard in this committee.

In addition to the three statewide races, all 100 seats in the House of Delegates are on the ballot. Currently, the Democrats have a slight majority in the House (51-49). They are likely to pick up more seats in November, which would give them a stronger majority. The Democrats also have a slight majority in the Senate. However, the Senate is not up for election again until 2027.

The VaSA Political Action Committee is non-partisan and makes political contributions to candidates on both sides of the aisle who support our issues and efforts to help our patients. If you have not donated to the VaSA PAC yet in 2025, you still have time! Your contribution helps us elect legislators who will champions the physician-led anesthesia care team, mobilize grassroots efforts in key districts, and fund strategic advocacy campaigns. Please make your contribution today.

At the same time, we are preparing for the 2026 Virginia General Assembly session. We know that we continue to have our work cut out for us, defending the current supervision law and protecting the recent law passed to license Certified Anesthesiologist Assistants. We will also have to closely monitor and engage with the regulatory process for implementing licensure and ensuring these professions can practice in Virginia as soon as possible.

POCUS Beyond Borders, *from page 10*

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Building a Foundation in POCUS: A Resident's Perspective

By Nikolas Newton, DO, PA-C
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Dr. Nikolas Newton

Although I am just beginning my journey in Anesthesiology as a PGY-1, my interest in POCUS began several years ago.

In 2019, as a new graduate PA working in a rural setting, I purchased a first-generation Butterfly Ultrasound in hopes of expanding the impact I could have on patient care. Since then, I have attended multiple POCUS conferences and invested countless hours in independent study. Yet in practice, my use of ultrasound remained limited, largely due to the lack of infrastructure and institutional buy-in at my clinical sites.

Most importantly, I quickly realized it is one thing to review professional images online, and quite another to obtain a parasternal short-axis view of the heart at 1 a.m. in a cramped patient room with a nurse at bedside, as you struggle to optimize your view. That challenge is exactly why the VSA POCUS Workshop was so valuable.

> *"This workshop was more than a learning event—it was a springboard. I look forward to building on this foundation and contributing to the growth of our POCUS program within our Anesthesia Department alongside my program director."*

What impressed me most was the thoughtful design of the workshop. Rather than overwhelming participants with advanced concepts, the program focused on mastering the fundamentals—optimizing image quality, troubleshooting common pitfalls, and reinforcing repetition through hours of supervised scan time.

With eight instructors from multiple institutions, each providing invaluable feedback, I left the workshop with both improved skills and greater confidence. By purposely avoiding higher-level topics such as Doppler, the faculty ensured that participants had time to practice the basics of image acquisition, interpretation, and application of the four ASA-tested scans (gastric, cardiac, lung, and FAST).

The workshop also provided something rarely offered: the opportunity to log proctored scans toward the ASA Diagnostic POCUS Certificate. For residents at institutions without long-established ultrasound programs, this is often the most difficult barrier to overcome. Thanks to the deliberate structure of the workshop, the 16 participants each obtained 6–8 proctored scans in all four core systems—meeting the minimum requirement for Part 4 of the ASA Diagnostic POCUS Certificate.

I would be remiss not to thank the medical students who volunteered their weekend to serve as models. Their willingness made the intensive, hands-on learning possible, and the dedication of the instructors created a supportive environment that left me more confident in my ability to integrate POCUS into my residency training.

This workshop was more than a learning event—it was a springboard. I look forward to building on this foundation and contributing to the growth of our POCUS program within our Anesthesia Department alongside my program director. I would strongly encourage any resident given the opportunity to attend future workshops to take full advantage of this tremendous experience.

Volunteer Opportunity!

Become the Newsletter Editor for the Virginia Society of Anesthesiologists!

Help gather article submissions 4 times per year
No editing, layout, or publishing required - the VSA staff handles it.
A great way to stay engaged and spotlight your colleagues' work.
Contact Andrew Mann at andrew@societyhq.com to learn more or volunteer!

Medical Students' Reflections on VSA's POCUS Workshop

By Kean Farhani and Rueshil Fadia
Medical Students
Virginia Commonwealth University School of Medicine
Richmond, VA


Kean Farhani


Rueshil Fadia

On September 13th and 14th, the Virginia Society of Anesthesiologists (VSA) hosted their point-of-care ultrasound workshop at the Delta Hotel in Richmond, Virginia. We participated in this event as ultrasound models.

Events like these are valuable because, although ultrasound has been used in medical practice for decades, it has not always been a standard component of medical training. For many years, medical students had limited exposure to ultrasound and often first encountered it during residency.

The use of ultrasound in medicine began in the 20th century and was initially only used in the radiology department. Early machines were large, immobile, and required technicians to operate. This limited its utility, especially in the acute care setting.

Alternative models of ultrasound arose in Europe and Asia, when the idea of physician-performed ultrasound was introduced. This marked the beginning of what we now call point-of-care ultrasound.[1] Portable machines became available around 1990. This dramatically expanded the utility to include hemodynamic, airway, gastric content and bladder volume assessments which are all particularly relevant to anesthesiology practice.[2]

While participating in this workshop, it quickly became evident that despite ultrasound's central role in the field, many techniques are still being refined by active physicians. This made us appreciate the emphasis our medical school's curriculum has placed on ultrasound.

> *This workshop served as the perfect opportunity to deepen our understanding of anesthesia's core concepts and the skills that anesthesiologists develop and refine throughout their careers.*

Although our curriculum has a well-established longitudinal ultrasound course, it is still difficult to understand the full scope of concepts within the field of anesthesia. The "block" style pre-clinical curriculum, composed of learning one organ system per several weeks, lends itself to a comprehensive understanding of fields like pulmonology or cardiology, rather than fields like anesthesia.

Furthermore, anesthesia is not a core rotation every student must rotate within in their third or fourth year of medical school. As medical students interested in pursuing anesthesia, we are constantly seeking more exposure to the field. This workshop served as the perfect opportunity to deepen our understanding of anesthesia's core concepts and the skills that anesthesiologists develop and refine throughout their careers.

The workshop consisted of lectures on different ultrasound exams and their application within anesthesiology. These lectures were followed by time for residents and attendings to practice these exams on the models.

By learning about the clinical utility of the various ultrasound techniques, we gained a greater understanding of the skills and concepts fundamental to the field. For example, identifying key landmarks associated with the FAST exam helped us learn the pathological findings that are important in the context of anesthesia. The workshop also had an intubation station which introduced us to airway management skills using laryngoscopes.

Another unique takeaway from the workshop was the ability to experience ultrasound from the patient's perspective. We now better appreciate the importance of patient comfort by maintaining their ability to view the monitor, minimizing unnecessary pressure, and being aware of the cold temperature of the ultrasound gel.

Finally, we learned the real-world complexity of ultrasound. As models, we learned how much downward pressure is required to generate a proper view. However, there are nuances to this. In the case of a subxiphoid cardiac view, a technique commonly taught in courses, the clinical context is an important part of implementation. Attempting to obtain this view in a patient recovering from abdominal surgery or having cardiac chest tubes inserted would be impractical or painful. In such cases, knowing alternative strategies or imaging views and implementing them based on your clinical context is essential.

We are grateful to have been included in and to have served as models for this VSA event. Experiences like these not only bridge the gap between medical education and clinical application but also allow medical students to envision themselves in their future roles.

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Anesthesiology Consultants of Virginia Hosts Skills Workshop

By Nicolas Lane, OMS-I
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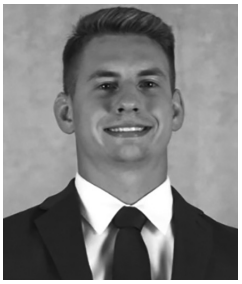


Nicolas Lane

This March, Anesthesiology Consultants of Virginia (ACV) hosted their 20th annual anesthesia skills workshop at the Carilion Clinic Center for Simulation.

The event welcomed medical students from Edward Via College of Osteopathic Medicine (VCOM), Liberty University College of Osteopathic Medicine (LUCOM), and Virginia Tech Carilion School of Medicine (VTCSOM) to learn fundamental skills used in anesthesia.

The workshop opened with remarks from Dr. Christine Sherman, who shared her perspective on the growth and future of anesthesiology. This was followed by Josh Sison, a VCOM OMS-III, who emphasized the importance of advocacy in anesthesiology and engagement with organizations such as the Virginia Society of Anesthesiology (VSA) and the American Society of Anesthesiologists (ASA). Then, Dr. James Crawford, a recently retired anesthesiologist, spoke on the significance of service and mentorship in medicine, expressing gratitude for his mentors as he shared meaningful anecdotes from his training and career. The introductory session concluded with a student match panel, where fourth-year students who had recently matched into anesthesiology offered insight into the residency application process and tips on becoming a competitive applicant.

Beginning the workshop sessions, students from the three participating medical schools were divided into mixed groups to encourage collaboration and peer learning. Each group rotated through six 30-minute hands-on stations led by anesthesiologists from ACV. These stations covered essential procedures such as emergency cricothyrotomy, ultrasound-guided regional anesthesia, central venous access, direct laryngoscopy, fiberoptic intubation, and neuraxial anesthesia.

VCOM-Virginia Medical Students Present at the Event alongside Dr. Christine Sherman

Dr. Neil Macdonald overseeing students practicing cricothyroidotomy

VCOM students learning how to perform direct laryngoscopy with Dr. Zachary Schwab

Dr. Neil Macdonald led the cricothyroidotomy workshop, beginning with relevant gross anatomy and advancing to the use of ultrasound for landmark identification and procedural execution. This provided students with an opportunity to learn how to secure an airway in an emergent situation.

Dr. Matthew Fulton expanded on the role of ultrasound in anesthesia as he guided students on how to visualize nervous structures commonly anesthetized (e.g., brachial plexus, axillary nerve, saphenous nerve, and sciatic nerve). Dr. James Crawford continued the ultrasound theme, recognizing its versatility as he taught students how to visualize the internal jugular vein to orient themselves and confirm location before central line placement.

Shifting focus, Dr. Zachary Schwab demonstrated primary methods of airway management, including endotracheal tube placement using direct laryngoscopy and video laryngoscopy. The use of supraglottic airway devices was also presented as an alternative to laryngoscopy. Covering an additional intubation modality, Dr. Maxine Lee guided students in the use of fiberoptic laryngoscopy, an essential tool for managing complex airways.

Students then applied their palpatory skills to identify anatomical landmarks and practice placing spinal and epidural blocks. These core techniques are used within neuraxial anesthesia to anesthetize the abdomen and lower body. This station was led by Dr. John Camp, who emphasized the

Continued on page 15

Skills Workshop, *from page 14*

clinical significance and demand for these approaches in anesthetic practice.

Reflecting on the event, I spoke with a current VCOM OMS-I, Jaeger Schutt, who said, "Participating in the anesthesia workshop was a truly valuable experience. Learning from seasoned providers gave me practical insights into patient care, and I particularly enjoyed learning how to perform fiberoptic intubation. The panel of students who recently matched into anesthesia provided helpful guidance and personal stories that made the journey to this specialty feel much more tangible. I'm grateful for the experience and feel more confident in my interest in pursuing anesthesia."

A special thank you to Carilion Clinic for generously providing access to their state-of-the-art simulation facility. This workshop would not have been possible without the coordination and continued support of Carilion, as well as the dedication of physicians like Dr. Christine Sherman. Such efforts provided medical students with a valuable opportunity to explore the field of anesthesiology and to practice fundamental anesthesia skills.

Dr. Matthew Fulton guiding students utilizing ultrasound

Additional thanks go to the physicians who attended and led the individual workshops: Dr. Maxine Lee, Dr. James Crawford, Dr. Neil Macdonald, Dr. Matthew Fulton, Dr. John Camp, and Dr. Zachary Schwab. Their time, expertise, and willingness to teach contributed greatly to the success of the event. Their commitment to education and mentorship left a meaningful impression on the students who participated.

The Arts

POCUS

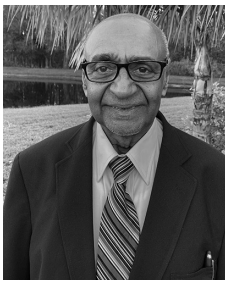
Point- of -Care Ultrasound is called POCUS
Not the popular magicians use of hocus-pocus
It refers to the use of a portable Ultrasound
Clinicians use to diagnose in real time around

Unlike ultrasound in radiology department
POCUS at bedside is a portable component
Immediate interpretation results in the best care
Patients with shorter hospital stay, in less despair

Noninvasive, radiation free rapid imaging tool
Confirms the diagnosis with a scientific rule
Helps in many specialties with parameter change
With rapid recovery and safer with least damage

Cardiologists (Focus) – assess LV/RV function
Cardiac tamponade, pericardial effusion
Identify pneumothorax & pleural effusion
Pulmonary edema and lung consolidation

Abdominal ultrasound shows free fluid
In peritoneal cavity & in bladder urine fluid
Anesthesiologists use ultrasound in OR, PACU
To monitor an endotracheal tube in the ICU



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