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Society of Critical Care Anesthesiologists Newsletter Volume 36 | Issue 2 | June 2025

Focus on Obstetric Critical Care

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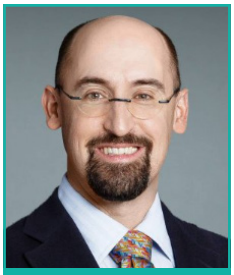
Society of Critical Care Anesthesiologists Newsletter Volume 36 | Issue 2 | June 2025

President's Message



Mark E. Nunnally, MD, FCCM
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Wasn't the Annual Meeting fun? I sensed great energy in the group, and the colorful leis were a fantastic addition. More than a few times, non-SOCCA attendees asked how they could get one – great for recruiting!

As part of our ongoing reorganization, we are now working on a policy document. Our bylaws are streamlined and consistent with those of a professional society like ours, leaving space to specify how we conduct our business. It may not sound like much, but it is a big step forward in terms of governance and will hopefully add continuity as our leaders rotate on and off the Board of Directors.

I'm fortunate to have an excellent team working on all these changes and couldn't ask for a better Executive Committee. Drs. Liu, Flynn, and Jabaley have all contributed significantly to the reorganization, and SOCCA is in a much stronger position because of their efforts. Dr. Mike Wall has been a great voice of experience and vision. I'm especially grateful to our administrator, Jennifer Rzepka, for her ongoing dedication to detail and organizational savvy.

Our website has been successfully migrated and is fully operational, and our committees are up and running. It's a good time for us!

If you haven't seen the emails about Perioperative Resuscitation and Life Support (PeRLS), check them out. We've refreshed the course and are currently in the peer review process for the updated guidance manuscript. Our collaboration with ASA has been very productive, and these materials are a great example of the value SOCCA offers its members. If you haven't taken the class, give it a try. Better yet, encourage your practice to use it for resuscitation certification. We designed it to be highly relevant to anesthesia and perioperative care providers.

Other offerings to keep in mind include a Women in Critical Care (WICC) webinar in July, a Journal Club in August, our Board Review Course on September 16–18, and the Job Fair in

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late September. After that, the ASA will be upon us. See you in San Antonio in October! Look out for the "SOCCA Social" logo and location – we'll be organizing meetups at ASA and other meetings as a way to connect and network.

We are growing our capabilities and staying strong as an organization. My goal is for you, our valued members, to see real benefits from your membership. I always welcome your ideas and feedback – you are what makes us great!

SOCCA MENTORING PROGRAM

SOCCA's mission is to support the development of anesthesiologists who care for critically ill patients. Recognizing the key role of mentorship in development, SOCCA is thrilled to offer mentorship resources to its membership.

Members at all levels of experience can now connect with individuals who have elected to volunteer their time and expertise to help others learn and grow in their knowledge about clinical practice, administration, leadership, research, organizational volunteerism, and other domains. These bidirectional relationships are not only mutually beneficial but foster a robust spirit of community within the organization.

Members seeking to identify a SOCCA mentor may navigate directly to SOCCA's Mentor Directory (member login required) where mentors are organized by their primary area of interest. Upon reviewing the directory, mentees are encouraged to identify their preferred mentor via the brief Mentee Submission Form.

You may also navigate to the Mentor Directory from SOCCA's public Mentoring Program page.

Thank you for your interest in becoming a SOCCA Mentee—and thank you to the many SOCCA members who have graciously offered to serve as Mentors.

Visit SOCCA's Mentor Directory today!

SOCCA MENTORING

Women in Critical Care Update: Integrating Critical Care Competencies into Obstetrics: A Call for Specialized Training

Critical care in obstetrics is a vital component of maternal and fetal healthcare, bridging the gap between standard maternity services and high-intensity medical intervention. As maternal mortality and morbidity continue to pose significant global challenges—especially in low- and middle-income countries—effective critical care infrastructure for pregnant and postpartum women becomes not only a clinical priority but also a public health imperative[1]. The complexities of pregnancy physiology, combined with the possibility of sudden and severe complications, necessitate a specialized approach that integrates obstetric knowledge with critical care expertise.

Pregnancy places unique physiological demands on a woman's body, affecting nearly every organ system. These changes can mask or mimic signs of critical illness, complicating diagnosis and delaying treatment. Conditions such as preeclampsia, hemorrhage, sepsis, and cardiomyopathy can escalate rapidly, causing a life-threatening emergency[2]. Without timely recognition & intervention, both maternal and fetal outcomes are often severely compromised. Critical care in obstetrics ensures that patients experiencing such complications receive rapid, specialized treatment in settings equipped with both intensive monitoring and obstetric support.

One of the core aspects of obstetric critical care is its multidisciplinary nature. Optimal outcomes often depend on seamless collaboration between obstetricians, anesthesiologists, intensivists, neonatologists, and nursing staff[3]. This team-based approach enables precise decision-making and individualized care, tailored to the dynamic needs of mother and child. Moreover, specialized training for clinicians in maternal-fetal medicine and obstetric critical care equips them with the skills to manage complex cases such as ARDS or multi-organ dysfunction in peripartum sepsis.

Beyond emergency response, critical care in obstetrics plays a preventive role. High-risk pregnancies—such as those involving pre-existing heart disease, diabetes, or autoimmune conditions—benefit from early identification and close monitoring, often in high-dependency units. This anticipatory model reduces the likelihood of escalation to full-blown critical illness and improves long-term health outcomes for both mother and baby[4,5]. Additionally, the presence of dedicated obstetric critical care services enhances the healthcare system's ability to adapt during crises, such as the COVID-19 pandemic, which disproportionately affected pregnant individuals.

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Equity in access to obstetric critical care remains a pressing global issue[6]. In many parts of the world, the absence of specialized facilities and trained personnel leads to preventable maternal deaths. However, the United States has the opportunities for obstetrical providers to receive additional training in critical care, which is an essential steps toward reducing disparities in access.

In summary, critical care in obstetrics is not just about managing emergencies—it is a cornerstone of comprehensive maternal health. By recognizing the unique challenges of critical illness in pregnancy and responding with specialized, multidisciplinary care, healthcare systems can significantly reduce maternal and neonatal mortality. As the field continues to evolve, additional training for obstetrical providers within the realm of critical care is needed to combat the rising maternal mortality and morbidity.

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Clinical Practice Committee (CPC) Update: Takotsubo Cardiomyopathy in Pregnancy: A Rare but Serious Condition Requiring Dedicated ICU Care – Collaborating Across Societies to Advance OB Critical Care & Cardio-obstetrics

Takotsubo cardiomyopathy (TTC), also known as stress-induced cardiomyopathy or "broken heart syndrome," is a transient form of heart failure characterized by reversible left ventricular dysfunction in the absence of coronary artery obstruction. While typically associated with older, postmenopausal women, TTC has increasingly been reported in pregnant and postpartum patients—a population in which presentation is often more complex, diagnostic tools are limited, and both maternal and fetal lives are at stake.

In pregnant patients, TTC is often triggered by physical or emotional stressors such as labor, preeclampsia, postpartum hemorrhage, or surgical delivery. Pathophysiology involves a catecholamine surge that leads to myocardial stunning and characteristic apical ballooning. Hormonal shifts in pregnancy may further sensitize the myocardium to catecholaminergic injury.[1,2]

Clinical presentation can closely mimic acute coronary syndrome (ACS), with chest pain, dyspnea, and ECG changes such as ST-segment elevations or T-wave inversions. Troponin elevations are common. **Echocardiography typically reveals apical ballooning with basal hyperkinesis**, which helps distinguish TTC from **peripartum cardiomyopathy**, where the ventricular dysfunction is more global and less reversible.[3,4] Cardiac MRI may provide additional clarity when radiation exposure is a concern or coronary angiography is not feasible.

While often self-limiting, TTC can result in serious complications: heart failure, arrhythmias, thrombus formation, and even sudden cardiac death.[5] These risks, coupled with the physiological demands of pregnancy, require high clinical vigilance and rapid multidisciplinary intervention. Fetal complications, including hypoxia and growth restriction, can arise from maternal hemodynamic instability.[6]

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Supportive care in a dedicated obstetric ICU setting is ideal. This includes careful fluid and medication management, continuous maternal-fetal monitoring, and access to high-level cardiovascular, obstetric, and neonatal expertise. Due to teratogenic risks, medications such as beta-blockers (atenolol) and anticoagulants must be selected with caution. In select cases, mechanical support may be necessary.

As maternal morbidity and critical illness rise across the U.S., the importance of interdisciplinary collaboration and infrastructure for maternal critical care cannot be overstated.

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This year's SOAP Annual Meeting in Portland marked a significant milestone in promoting these goals. For the first time, a **joint SOCCA-SOAP panel** spotlighted the evolving field of cardio-obstetrics and the critical care needs of pregnant patients. This cross-society collaboration reflects our shared mission to elevate maternal care through education, research, and innovation.

I'm honored to be **Chair of the Obstetric Critical Care Medicine (OB-CCM) Task Force** within the SOCCA Clinical Practice Committee and recently appointed **Co-Chair of the SOCCA Annual Meeting Oversight Committee**. Through these roles—and continued collaboration between SOCCA and SOAP—we aim to grow the field of OB critical care and ensure that critically ill pregnant patients receive the specialized, expert-driven care they deserve.

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Communication Committee Update: Case Report: Primigravida with Coronary Artery Aneurysm and History of Kawasaki Disease

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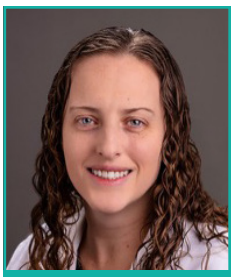

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Introduction

Kawasaki Disease (KD) is a multisystem febrile vasculitis, presumably infectious in etiology, that primarily affects children. Serious complications include coronary arteritis, coronary artery aneurysm (CAA) and stenosis, coronary thrombosis, and rare rupture of a coronary aneurysm.[1] There are limited case reports of patients with KD, resultant coronary aneurysms and their management in pregnancy and for delivery.[2–7] We present a case of a patient with a giant coronary aneurysm secondary to KD in childhood who underwent an uneventful pregnancy and delivery via primary cesarean section.

Case Description

A 30 y/o primigravida presented to the high-risk cardio-OB clinic at nine weeks gestation with a history of KD. At age 13, the patient experienced a prolonged febrile illness with subsequent diagnosis of KD treated with IVIG. At age 16, she was diagnosed with a 10 mm x 23 mm giant CAA of the left anterior descending coronary artery on cardiac catheterization. Patient followed with cardiology and had normal EKGs and echocardiograms. Stress test at age 26 demonstrated no evidence of ischemia, and cardiac CT performed at age 28 showed stable CAA. Anticoagulation was maintained with apixaban and aspirin until pregnancy, when she was transitioned to enoxaparin BID and aspirin.

Cardiac MRI was performed at 22 weeks, but coronary sequences were not adequate for assessment; echocardiogram remained normal. Delivery planning included discussion of elective cesarean section versus vaginal delivery with assisted second stage to avoid valsalva, avoiding terbutaline and methergine as absolute and relative contraindications. At 36 weeks, the patient was transitioned to heparin 10,000 units SQ BID and aspirin. At approximately 37 weeks, the patient was admitted for finding of a critically high calcium level of 14.8 mg/dL caused by primary hyperparathyroidism, and non-sustained severe range pressures. Per the MFM team, delivery was now indicated in the setting of worsening blood pressure control at term and finding of breech presentation. A Cesarean section was planned for the following morning to allow for calcium correction via diuresis with furosemide, intravenous fluid, and calcitonin. Cesarean delivery was performed in cardiac operating room with cardiac anesthesia, cardiac surgery, perfusion, and NICU teams on standby. Heparin had been discontinued for >24 hours. Spinal anesthesia was performed with the patient on standard ASA monitors and an arterial line placed in the operating room. A female infant was born with normal Apgars, and the patient recovered well.

Discussion

Pregnant patients with a history of KD should be managed under the care of a multidisciplinary team including maternal fetal medicine, cardiology, and anesthesiology. Mode and timing of delivery should be based on obstetric considerations.[4,7] The preanesthetic evaluation should focus on cardiac function, known cardiac lesions, arrhythmias, and patient's functional status.[7,8] Coronary artery aneurysms, which occur in 25% of untreated cases, can develop as early as 7 days after onset of fever and continue to increase in size up to 6 weeks after disease onset.[4,8] Approximately half of CAAs will regress to normal diameter within 2 years.[8] Giant aneurysms are classified as greater than 8 mm internal diameter and have an estimated 33% mortality.[8] Some patients have required coronary artery bypass grafting due to giant CAA.[4] The goal for these patients is to minimize cardiac stress and balance cardiac oxygen demand with supply, as they may not be able to compensate for increased demand.[4,5,7–9] Labor epidural is likely beneficial in blocking sympathetic output from painful contractions.[7] Neuraxial

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anesthesia was shown to be safe in a small case series of 19 pregnancies in 13 women with history of KD and known coronary artery lesion.[7] For cesarean sections spinal blockade was safe, though 5 of 7 cases in that case series required vasopressor to treat hypotension.[7] Invasive monitoring should be determined based on patient's functional status and cardiac function. Only 54% of patients in the Inoue case series had an arterial line for hemodynamic monitoring.[7]

While aneurysm rupture could be catastrophic, pregnant patients are at higher risk of thrombosis and arrythmias.[4–6] There is not a clear consensus on the best practice regarding anticoagulation. Some patients are managed with therapeutic enoxaparin, while others are managed with low dose aspirin, and others were not on any anticoagulation or antiplatelet medications.[4,6,7] Anticoagulation must be factored into timing of neuraxial anesthesia and may increase risk of postpartum hemorrhage. Pitocin can be given intravenously or by direct intrauterine injection; however, methylergonovine is contraindicated due to risk of coronary artery spasm.[5–7] Delivery is associated with significant increase in maternal cardiac output and is presumed to be the time of highest risk; however, most complications have occurred postpartum.[7]

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Membership Committee Update: Hematological Management of Postpartum Hemorrhage

Postpartum hemorrhage (PPH) remains a leading cause of maternal mortality, responsible for 8% of maternal deaths in the developed world and 20% in developing regions (1). Despite efforts, the rate of PPH requiring blood transfusion has increased in the United States from 8 out of 10,000 deliveries in 1993 to 40 out of 10,000 deliveries in 2014 (2). While the causes for this increase are multifactorial, it is clear that new approaches are needed. One study showed that a comprehensive quality tool kit for hemorrhage could be successfully scaled up to reduce mortality in PPH patients (3). In a similar vein, the American College of Obstetrics and Gynecologists (ACOG) stressed the importance of organized processes to help coordinate PPH management (4). Since a non-insignificant number of PPH patients require intensive care, critical care providers should be cognizant of targets for systematic improvement. Specifically, there are several recent advances in transfusion strategies that this article will focus on.

Tranexamic acid has been finding growing acceptance in the management of hemorrhagic shock and is an easy target for implementation. The WOMAN trial found that TXA administration within three hours of delivery had a mortality benefit in PPH patients without a corresponding increase in thrombosis risk (5). For dosage, the World Health Organization recommends an initial 1 g dose, which can be repeated within 30 to 60 minutes (6). Fibrinogen is the first coagulation factor to decrease in massive obstetrical bleeding, and plasma levels are a good predictor of PPH severity. Several obstetric causes of PPH such as placental abruption, genital tract trauma, amniotic fluid embolism and uterine atony can also lead to rapid fibrinolysis (7). Therefore, early administration of cryoprecipitate should be considered as part of an obstetric-specific transfusion algorithm. Of note, plasma administration alone is inefficient, as 30 mL/kg is needed to increase the fibrinogen concentration by 1 g/L (7). Newer therapeutics such as fibrinogen concentrates, recombinant factor VII and prothrombin complex concentrates show promise but have yet to show mortality benefit. The benefit of a high plasma to red blood cells transfusion ratio is unclear in recent studies. However, in the setting of massive transfusion, a 1:1 ratio of plasma to red blood cells is still recommended. The PROPPR trial found that a 1:1:1 (plasma, platelets, red blood cells) transfusion ratio led to better "anatomic" hemostasis compared to 1:1:2 in the setting of massive blood loss (7). Cold-stored, low-titer, type-O whole blood transfusion is an emerging alternative to component-based strategies that is feasible in the obstetric population (8); this may be standardized in non-tertiary centers in the future. Lastly, due to all these considerations, viscoelastic testing can play an important role. It reliably assesses fibrinogen levels in the obstetric population and could be part of a protocol for detection of hyperfibrinolysis or relative factor depletion (9). Obstetric-specific efficacy data is lacking, but decreased blood product utilization can reduce costs as well as the risk of volume overland and transfusion-related acute lung injury.

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CRITICAL CURRENTS

A space dedicated to exploring topics of general interest to the SOCCA membership, curated by the Interchange editors to inspire thought, dialogue, and themes for future issues.

Education Committee: Do I Really Belong Here? Impostor Syndrome, the Loud Voice in Our Heads

A rapid pounding in my chest woke me up in the morning, as I walk through the hospital doors, my hands start to sweat while my mind was racing thinking of all the possible things that could go wrong that day. Am I even able to solve all of those things? What if I cannot intubate a patient? What if I can't place that difficult central line? What if someone dies because I am not good enough for this job? This constant unsettling fear is not a fear of failure, but of being found out. Despite years of training, exams, certifications, sleepless nights, and sacrifices, I couldn't shake the thought that I didn't belong. That fear has a name: *impostor syndrome*.

Imposter syndrome (also known as impostor phenomenon, fraud syndrome, perceived fraudulence, or impostor experience) was first described by psychologists Clance and Imes in 1978 (1) and became widely known after Clance´s 1985 book "The Impostor Phenomenon: When Success Makes You Feel Like a Fake" (2). While impostor syndrome can affect any individual, it is particularly prevalent among high-performing professionals in the healthcare sector (5), with a prevalence of 22-60% in healthcare professionals and medical students (7).

Impostor syndrome is a psychological pattern that can lead to chronic self-doubt, burnout, emotional exhaustion, work-life conflict, and, in severe cases, even the risk of self-harm and suicide (8,9,10,11).

Although there's no universally accepted definition of impostor syndrome, tools like the Clance Impostor Phenomenon Scale (CIPS) (2) and the Young Impostor Scale (12) offer valuable insight into how this entity manifests. The original criteria outlined by Clance have since been expanded, helping to illuminate key characteristics often seen in those struggling with impostor syndrome. These include the impostor cycle, perfectionism, super-heroism, atychiphobia (fear of failure), denial of competence, and achiever's phobia (achievemephobia) (3)(4)(6).

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Anesthesiologists are trained to be "perfect" – to not make mistakes, to know every answer, to always be in control. But underneath the white coat or the surgical scrubs, many physicians carry a quiet anxiety that they're not as competent as others think.

As a junior anesthesiologist and soon to be intensivist, I've learned that this internal daily battle can be especially intense in our field. Anesthesiology and critical care demand absolute vigilance, rapid decision-making, and a deep knowledge base that spans throughout multiple systems. Yet, unlike surgeons or internists, we often work in the shadows – if things go right, no one notices. If they go wrong, we're suddenly center stage. Remember, "It's always anesthesia's fault." That invisibility, paired with the pressure of responsibility, gives impostor syndrome room to grow.

Add that to the experience of being an international medical graduate, and the feeling of not measuring up can grow even stronger. Language barriers, cultural differences, and the pressure to prove yourself at every turn can amplify those internal doubts. I often compared myself to colleagues who seemed more confident, more fluent, more at ease. It took years to realize that

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competence doesn't always look the same – and that the voice in my head wasn't truth, but plain fear.

Impostor syndrome doesn't go away entirely, but it can be managed. For me, the turning point came when I started opening up about it with peers. I realized I wasn't alone. Mentorship, community, and self-compassion made a huge difference. I've learned that doubt doesn't mean I'm not capable – it means I care deeply and I'm pushing myself to grow.

To fellow anesthesiologists and physicians who feel like impostors: you are not alone, and you are *not* a fraud. You've earned your place. And to international doctors walking the same path I did – your perspective is your strength, not your weakness.

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Education Committee: A Review of Cardiac Tamponade

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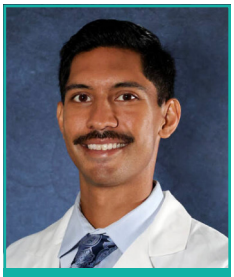

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Introduction

The pericardium is comprised of a double-layered serosal membrane, with a visceral layer that covers the surface of the heart and a parietal layer that lays exterior**.** Pericardial effusions occur when the volume of fluid between these layers exceeds a physiological amount. When this occurs, the pericardial space compresses the heart chambers, which can lead to a medical emergency. If left untreated, cardiac tamponade can cause hemodynamic compromise, cardiac arrest, circulatory shock or death [1].

Etiology and Pathophysiology

There are many causes of pericardial effusions. While effusions are very common after cardiac surgeries, they are rarely large enough to result in tamponade physiology [1, 4]. Sagrista-Sauleda et al reported the most common diagnoses of 322 Spanish patients with moderate to large effusions were: acute idiopathic pericarditis, iatrogenic effusion, malignancy, chronic idiopathic effusion, acute myocardial infarction, end-stage renal disease, congestive heart failure, collagen vascular disease and tuberculosis or bacterial disease [4].

Cardiac tamponade results in hemodynamic compromise due to excessive accumulation of fluid or air in the pericardial sac [6]. The heart is confined by a low compliant pericardial sac. Thus, even a small amount of fluid can increase pericardial pressure [6]. This elevated pericardial pressure applies pressure to the chambers of the heart, leading to diminished diastolic filling and reduced stroke volume. Typically, the right atrium and ventricle are affected earlier on in the development of tamponade due to their thinner, less compliant walls compared to the left side of the heart [2].

Clinical Presentation

When examining a patient, there are certain clinical markers that help indicate cardiac tamponade physiology. In 1935, a thoracic surgeon named Claude Schaeffer Beck described three classical findings for cardiac tamponade – decreased arterial blood pressure, increased jugular venous pressure and distant heart sounds. This became known as the Beck Triad [1-2, 4]. Presenting symptoms can vary depending on how rapidly tamponade physiology occurs, dividing patients into 2 subgroups: acute and subacute.

Acute cardiac tamponade presents with rapid onset of symptoms due to sudden accumulation of pericardial fluid, leading to hemodynamic compromise [1,4]. Clinical symptoms include severe hypotension, tachycardia, and signs of shock. The classic symptoms in Beck's triad are not always present.

Subacute cardiac tamponade can develop over days or weeks. This allows the pericardium to stretch and become more compliant. A gradual progression may lead to less obvious symptom manifestation. Patients may present with dyspnea, malaise, and peripheral edema. Additionally, pulsus paradoxus, a decrease in systolic blood pressure of more than 10 mmHg during inspiration may be present and is highly specific for tamponade physiology. Jugular venous distention may still be observed, but with varying presentation [1,3,4]. Identifying pertinent signs and symptoms is paramount to the accurate diagnosis and appropriate intervention.

Diagnostic Approach

Point of care ultrasonography (POCUS) is a useful tool to diagnose cardiac tamponade and guide pericardiocentesis in emergent situations. Kearns and Walley described the importance of echocardiographic examination in determining the size, location, and characteristics of pericardial effusions [2]. Additionally, identifying the hemodynamic signs such as late right atrial diastolic collapse (early finding) and early right ventricular diastolic collapse (highly specific). Other echocardiography findings may include a plethoric inferior vena cava indicating

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elevated central venous pressure, and respiratory variation in mitral and tricuspid valve inflow velocities [2].

In addition to POCUS, electrocardiograms (EKG) and chest radiographs are also useful diagnostic tools. EKG findings for pericardial effusions would include dampened QRS voltage, electrical alternans, arrhythmias, ST-segment elevation, and PR-segment depression. Electrical alternans, while specific, is not highly sensitive. Chest radiographs may appear normal or demonstrate an enlarged cardiac silhouette if the effusion is large [4].

The hemodynamic criteria for diagnosing cardiac tamponade physiology are the equalization of diastolic pressure across all cardiac chambers and evidence for low cardiac output. Pulmonary artery catheters (PAC) can be used to identify hemodynamic profile parameters. For example, PACs can reveal diastolic pressure equalization in the right atrium, right ventricle, pulmonary artery, and pulmonary capillary wedge pressure. Equalization occurs due to increased resistance to the heart from the external compression in the pericardial sac [4].

Management and Stabilization

Initial stabilization of patients with pericardial effusions causing tamponade is maintaining hemodynamic stability. Fluid resuscitation is essential to increasing preload and optimizing cardiac output. Vasoactive agents may be used in conjunction with intravenous fluids to support blood pressure by increasing peripheral resistance [3]. Bedside echocardiography is an important monitor throughout management and can be useful in guiding fluid resuscitation. [2,6]

The definitive treatment for cardiac tamponade is ultrasound-guided pericardiocentesis to optimize safety and efficacy. This procedure involves percutaneous pericardial fluid drainage to relieve the pressure on the heart [1-2, 5]. In cases such as aortic dissection, trauma, or purulent pericarditis, surgical intervention such as a pericardiotomy may be required [1, 3].

Post-procedure care focuses on use of nonsteroidal anti-inflammatory drugs (NSAIDs) and colchicine to prevent recurrence and effusive-constrictive pericarditis [1]. Regular follow-up with echocardiography is crucial for the continued monitoring for recurrence and treatment effectiveness [5].

ICU Considerations

Diagnosing tamponade in mechanically ventilated patients and post-cardiac surgery presents unique challenges due to dynamic hemodynamic states and potential presence of surgical artifacts. In mechanically ventilated patients the classic cardiac tamponade signs may be mitigated by positive pressure ventilation. Echocardiography remains an essential monitoring tool for guiding diagnosis and management for these unique challenges [2-3].

A multidisciplinary team involving intensivists, cardiologists, and cardiothoracic surgeons is essential for effective cardiac tamponade management. This ensures comprehensive care and collaborative decision-making. This approach leads to accurate diagnoses with advanced imaging techniques and timely procedural or surgical interventions [1-3].

Conclusion

Cardiac tamponade is a life-threatening condition characterized by accumulation of fluid or air in the pericardial space, leading to increased intrapericardial pressure and impaired cardiac filling and potentially obstructive shock [1]. Cardiac tamponade symptoms depend on the acuity of its progression. Echocardiography is essential for diagnosis [2,4]. If left untreated cardiac tamponade can become rapidly fatal. Urgent pericardiocentesis or a surgical pericardiotomy may be indicated depending on severity of symptoms and etiology of the disease [1].

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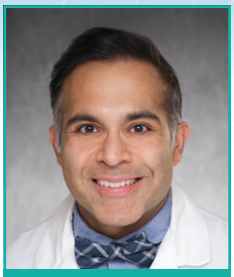
Education Committee: Mechanical Circulatory Support Devices (MCSDs) Training/Education in Cardio-Thoracic Intensive Care Unit (CT-ICU)



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Introduction:

Cardiovascular diseases remain the leading cause of death in the United States, with over 700,000 deaths in 2022 alone accounting for nearly one in every five deaths (Centers for Disease Control and Prevention, CDC, 2024)[1]. This alarming statistic underscores the severity of the cardiovascular health crisis in the country. With an aging population and increasing prevalence of conditions like heart failure, myocardial infarction, and cardiogenic shock, the need for advanced cardiac interventions, including mechanical circulatory support (MCS) devices, has grown significantly. Devices such as Intra-Aortic Balloon pump (IABP), temporary ventricular assist devices Impella (Abiomed, Danvers, MA, USA), durable left Ventricular Assist Device (LVAD), and Extracorporeal Membrane Oxygenation (ECMO) are increasingly utilized to manage these critical conditions, offering life-saving support for patients with severe heart failure or during high-risk cardiac procedures. For example, the use of LVADs alone in the U.S. has increased by over 20% in the past decade (American Heart Association, 2020)[2]. As the adoption of MCS devices expands, the importance of adequately training clinicians in their management cannot be overstated.

Critical care anesthesiologists must be equipped with the knowledge skills and expertise to both effectively use these devices clinically and position themselves as leaders in cardiovascular critical care. Similarly, critical care anesthesiologists can also serve as expert consultants when these patients require non-cardiac procedures and surgeries. Thus, implementing robust educational programs that integrate simulation-based training, hands-on device experience, and competency evaluations has become essential for ensuring that healthcare teams can provide optimal care in Cardio Thoracic Vascular Intensive Care Units (CTICUs).

Understanding Mechanical Circulatory Support Devices:

Mechanical circulatory support (MCS) devices are designed to temporarily support or replace the function of a failing heart. These devices aim to decrease intraventricular filling pressures (preload) and myocardial oxygen demand while increasing coronary perfusion as well as to vital organs through augmentation of cardiac output (CO) and cardiac power index (CPI). Common MCS devices include the IABP, temporary percutaneous ventricular assist devices, durable Left Ventricular Assist Devices (LVADs) and Extracorporeal Membrane Oxygenation (ECMO), each of which has specific applications depending on the clinical scenario.

Choice of device depends on the (1) clinical scenario (for example, procedural support for high-risk coronary interventions, cardiogenic shock due to myocardial infarction or biventricular failure), (2) left, right or biventricular failure (3) degree of support required and (4) predicted prognosis including recovery or plan for heart transplantation. The SCAI (Society for Cardiovascular Angiography and Interventions) Staging Classification can provide a useful framework for understanding the severity of cardiogenic shock and thus guiding the use of MCS devices[3,4] The decision of which device to pursue however hinges on individualized and multidisciplinary decision-making.

Training clinicians in the proper use of these devices is critical to improving patient outcomes, as the severity of shock directly influences the device selection, device management, and overall clinical approach.

Principles of Education:

Given the rapidly evolving climate of MCS devices and growing evidence in the field, education programs for the use of these devices must reflect current clinical evidence, be multimodal in its delivery and be repeated at regular

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intervals to maintain both clinical proficiency and ability to actively troubleshoot. Clinical and educational experts alike should partner for an effective and successful curricular design. Considerations in simulation training for MCS are outlined below.

Simulation Training for MCS Devices:

Simulation-based training plays a crucial role in developing and refining the skills required for the safe and effective use of MCS devices. Simulation training offers healthcare providers the opportunity to practice in real-time, high-stress scenarios and can be successfully used as part of a multimodal curriculum alongside lectures, targeted reading and supplemental videos. Simulation offers the added benefit of hands-on experience with these devices, allowing clinicians to both become proficient in technical management, and the opportunity to both identify alarms and troubleshoot complications.

1. Device-Specific Simulations:

Simulation training should cover the operation of various MCS devices, including the microaxial flow pump, LVAD and ECMO, as these devices have different indications, insertion techniques, and management protocols.[5] Device-specific simulation training can be further subdivided into (1) Appropriate insertion and placement of devices (2) Clinical management of devices including familiarity with consoles and device components (3) Appropriate clinical interpretation of waveforms and numbers specific to these devices (4) Identification and interpretation of device alarms and (5) diagnosis of device-related complications.

Microaxial Flow Pump: Known commercially as the Impella device (Abiomed, Danvers, MA, USA), the Impella is a temporary microaxial transvalvular flow pump that is increasingly used in the United States (6). Training with the Impella device involves the insertion process, positioning of the device, troubleshooting, and management of device-related complications such as hemolysis, vascular injury, and pump dysfunction. Furthermore, providers should learn to interpret the hemodynamic data/waveforms generated by the device and adjust settings accordingly during initiation as well as weaning process. Advanced simulations should also include managing hemodynamic changes that occur during Impella support, addressing device alarms and understanding the optimal flow rates based on clinical indications.

- **Durable LVAD Simulation**: For durable LVADs, simulation training should include managing the device settings, including pump speed, power and pulsatility index (PI) based on clinical condition and the monitoring of patients for complications such as suction alarms, device thrombosis, infection at the driveline insertion site, and bleeding. Simulations should also include managing the patient's response to long-term LVAD support, including assessing for signs of heart failure or device malfunction. Additionally, simulations should prepare clinicians for emergency scenarios, such as pump failure or significant changes in hemodynamics that require immediate interventions like cardiac arrest while being on LVAD.

- **ECMO Simulation**: **Extracorporeal membrane oxygenation (ECMO)** is used for cardiac and cardiorespiratory failure, with data showing a significant uptick in use in recent years. Simulation training should focus on the technical aspects of setting up and managing an ECMO circuit, including cannulation, pump settings, oxygenation levels, and anticoagulation management. Simulations should also address complications specific to ECMO, such as bleeding, thrombosis, and circuit issues, and guide trainees in troubleshooting the equipment. Furthermore, scenarios should emphasize the importance of real-time hemodynamic and gas exchange monitoring to assess ECMO efficacy and ensure that clinicians are adept at responding to alarms, adjusting settings, and making rapid decisions in emergencies. By providing a safe environment for practice, ECMO simulations prepare fellows to handle the high-stakes situations that often arise with this advanced form of life support.

2. Realistic Clinical Scenarios:

Simulation-based training should replicate real-life clinical scenarios that require the use of MCS devices. These scenarios can be designed to mimic a patient's deterioration in the CTVICU, such as progressing from acute heart failure to cardiogenic shock. By practicing these scenarios, clinicians can develop the skills needed to troubleshoot devices, respond to alarms, adjust settings, and decide on appropriate interventions.

In particular, simulation allows providers to practice complex decision-making in situations where multiple devices might be in use, such as when a patient is supported by both an Impella and ECMO. These high-

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MCSDs Training/Education in CT-ICU *continued from previous page*

fidelity simulations provide an invaluable opportunity to practice coordinating care in a multidisciplinary setting, with intensivists, cardiologists, nurses, and perfusionists working together in a team-based approach.

3. Feedback and Reflection:

Effective simulation training also includes debriefing and feedback sessions. These sessions provide an opportunity for participants to reflect on their performance, identify areas for improvement, and discuss alternative management strategies. Feedback from senior clinicians and educators is essential for reinforcing proper techniques and ensuring that participants gain a deeper understanding of the clinical application of MCS devices.

Time to take a lead:

As the use of MCS devices and other advanced cardiac support continues to rise, comfort with these devices should be a goal for trainees and practicing anesthesiologists alike. Considerations as these educational programs are drafted include regulatory and compliance considerations that are largely institutionally dictated and may drive institutional mandates regarding both credentialing and proof of competency. While fellowship training may provide a significant portion of MCS-related education there should be a departmental and specialty-wide commitment to cementing the role of critical care anesthesiologists as leaders in cardiovascular critical care.

Conclusion

As the use of MCS devices becomes more widespread, ensuring that healthcare providers are well-trained and comfortable managing these life-saving technologies is crucial. With the growing need for specialized training and the establishment of clear privileging protocols, academic centers and hospitals must take proactive steps to integrate MCS education into their core clinical programs. By doing so, we can ensure that intensivists, perfusionists, nurses, cardiologists, and trainees are adequately prepared to provide the best possible care to patients requiring MCS support.

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Education Committee Update

The Education Committee has been hard at work delivering high-quality educational content to SOCCA members and has had a very productive year so far. The recently concluded IARS/SOCCA Annual Meeting in Hawaii was well attended, with 250 SOCCA-affiliated members and over 1,100 participants overall. The SOCCA Annual Meeting Subcommittee collaborated closely with the IARS Annual Meeting Oversight Committee and should be commended for organizing highly engaging sessions with excellent educational content.

The SOCCA social at the Barefoot Bar was a tremendous success, with over 100 participants enjoying the opportunity to network on the beautiful Waikiki Beach under a stunning fireworks display.

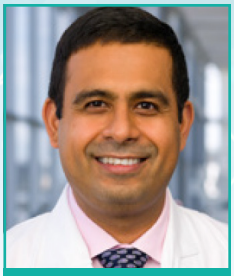
A highlight of the SOCCA Annual Meeting was the inaugural Alan G. Sieroty Anesthesia Patient Safety Foundation (APSF)/SOCCA Lecture, presented by Dr. Meghan Lane-Fall. This was followed by engaging discussions on patient safety in anesthesia and critical care with Drs. Steven Greenberg, Christina Hayhurst, Craig Jabaley, Kunal Karamchandani, and Jamie Sparling. This lecture will be held annually during the IARS/SOCCA Annual Meeting, and we look forward to continuing this important dialogue in future meetings.

We encourage SOCCA members to submit session proposals for the 2026 IARS/SOCCA Annual Meeting, which will take place in Montreal, Canada, from May 1–3. The call for session proposals will be released shortly. Leadership of the Annual Meeting Subcommittee will transition this year, with Drs. Ioannis Angelidis and Jennifer Ellia taking over from Drs. Allison Dalton and Kunal Karamchandani as Co-Chairs.

The Webinar Subcommittee, led by Drs. Amit Prabhakar and Javier Lorenzo, has scheduled three webinars for 2025 and has successfully secured CME credits for the SOCCA Educational Webinar Series. The committee is awaiting confirmation for a fourth webinar in the fall and will begin planning the 2026 series later this year.

The Virtual Education Subcommittee, chaired by Dr. Anna Budde, has been collaborating with *OpenAnesthesia* to develop critical care content. Dr. Budde was recently appointed Associate Editor for the Critical Care section of *OpenAnesthesia* and serves as the SOCCA liaison. The subcommittee has identified 10 key topics and is preparing mini-review articles for publication on OpenAnesthesia.org.

They are also working with the Journal Club Subcommittee to potentially include in-depth evaluations of articles presented during the Virtual Journal Club.



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Chair, SOCCA Education Committee
UT Southwestern Medical Center
Dallas, TX

Anna Budde, MD
Vice-Chair, SOCCA Education Committee
University of Minnesota
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The Board Review Course Subcommittee is chaired by Dr. Talia Ben-Jacobs, with Dr. Veena Satyapriya as Vice Chair. The subcommittee is actively preparing for the 2025 SOCCA Critical Care Medicine Board Review Course, which will feature entirely new content. The course will be held on September 9, 11, 16, and 18 at 5:00 PM EST. Promotions for this first-ever live virtual Board Review Course are well underway. The tiered pricing structure is as follows: Early Bird Member rate (before June 1) is $49, regular Member rate (after June 15) is $79, and the Non-Member rate is $99. All registrants will receive access to both the live sessions and online content. The subcommittee is working closely with the Program Directors Advisory Council to promote the course across anesthesiology critical care fellowship programs, and we encourage members to help spread the word.

The Question Bank Subcommittee, led by Dr. Emily Naoum as Chair and Dr. Hesham Ezz as Vice Chair, is developing a question bank for fellows preparing for the ABA Critical Care Medicine exam. The subcommittee is collaborating with the Society of Cardiovascular Anesthesiologists (SCA), which has successfully launched a similar virtual question bank for its members.

Last but not least, the Virtual Journal Club Subcommittee, chaired by Dr. Aalok Kacha, launched its inaugural session in February and plans to host three more sessions in 2025.

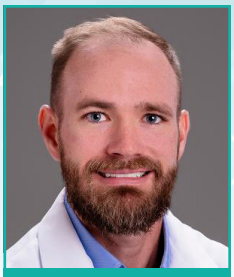
The Education Committee is excited to offer these valuable educational resources to the SOCCA community. We extend our sincere thanks to the SOCCA leadership for their unwavering support, and a special thank you to Ms. Jennifer Rzepka and her team for their exceptional efforts in organizing and promoting these events.

Communication Committee Update

The Communications Committee has hit the ground running since our Annual Meeting in March. I would be remiss not to first attribute the success of this committee – and really, of SOCCA as a whole – to the dedication of Madiha Syed, MD, immediate past chair of the committee. Her leadership has resulted in the streamlined production of our quarterly newsletter, *Interchange*; increased engagement on our X page; the establishment of LinkedIn and Facebook accounts; and the effective dissemination of important Society events, among many other contributions.

Looking ahead, Liang Shen, MD (vice chair of the committee), and I have consulted with our President, Dr. Nunnally, and the Board of Directors to outline a plan for the Society's continued success. Through the diligent efforts of our small group of volunteers, we plan to enhance our social media presence, increase readership of *Interchange*, and assist ARC in revamping the Society's website.

Over the past five years, the committee has worked to build and expand the Society's social media presence. The initial launch of our Twitter (now X) account was intended as an additional channel to communicate with current and prospective members and promote collaboration. Over time, our X page has gained more followers, and we expanded into Facebook and LinkedIn last year. In an effort to reach trainees – and hopefully attract them to the field – we are launching an Instagram account this year as well. Follow us @soccacritcare! At a time when fellowship positions remain unfilled, we hope this new platform will help showcase the appeal of our specialty.



Kyle Bruns, DO
Chair, SOCCA Communication Committee
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You may notice some changes in this edition of *Interchange*. Beginning with this issue, we will feature themed editions highlighting various aspects of critical care, current challenges in the field, and other specific topics. Our goal is to make reading the newsletter more rewarding for our time-strapped audience. We are fortunate to kick off this new format with contributions from experts in obstetric critical care. In addition, we are trialing a cover page – similar to other medical publications – in hopes of boosting engagement.

SOCCA's management, ARC, continues to facilitate a more nimble and productive Society. In this spirit, the Communications Committee is contributing to the website overhaul. You may have noticed some outdated links or pages; rest assured, these are being addressed. As part of this effort, the now-dormant blog *SOCCA Drip* will be officially retired.

Thanks to the dedication of our small but hardworking volunteer team, we anticipate exciting developments in the coming year. If you – or someone you know – are interested in contributing in any of the above areas, especially by authoring an article for *Interchange*, please reach out.

We hope you enjoy this first themed issue and look forward to bringing you the next edition, which will focus on opportunities in critical care anesthesia.

CRITICAL CURRENTS

Treasurer's 2024 Year-End Financial Report

As a large – and growing – society, SOCCA has responsibilities to its constituents. Obviously providing education, opportunities for research and policy writing, and camaraderie are benefits of being a member of SOCCA that we all enjoy. However, as a large society, financial stability is an onus upon SOCCA that most members may not think about often.

As many know, in 2024, SOCCA underwent two major changes. Firstly, SOCCA increased collaboration with IARS for the SOCCA Annual Meeting, which led to favorable financial adjustments. Secondly, we changed management companies to Association Resource Center. These changes led to a welcomed and increased scrutiny on our financial position. It is my pleasure as Treasurer to report that the financial position of SOCCA is favorable and sustainable.

The largest source of income for SOCCA is membership dues, which produced a revenue of almost $129,000 in 2024 (Thank you!). SOCCA also has other sources of income including job fair sponsorship, fees from job postings on the website and monies earned from selling the Resident's Guidebook. In 2025, we are hopeful that two new sources of income will come to fruition with webinar sponsorship and fees for the Board Review Course.

As far as expenses, operating costs are the main source of outgoing monies. In order keep SOCCA as a user-friendly society with optimal benefits for our membership, much goes on behind the scenes. These costs include maintaining the website, marketing, several software programs, offering continuing education for webinars, and of course, paying taxes. SOCCA also uses funds to present annual awards, such as the Lifetime Achievement, Innovator and Young Investigator awards. The annual meeting also brings about expenses in terms of food and beverage costs for social events, travel expenses and audiovisual expenses.

Brigid Flynn, MD
Treasurer, SOCCA
University of Kansas Medical Center
Kansas City, KS

In total, SOCCA had a net revenue of $161,128.40 in 2024, which is an increase of 47.50% from 2023. SOCCA maintains the majority of these monies in investments and money market funds in hopes to preserve capital while earning a modest return, which has occurred throughout the years.

Financial responsibility and membership trust are paramount duties for SOCCA to maintain. It is my hope as Treasurer of SOCCA, that all members feel that their hard-earned dollars are being put to excellent use and they are receiving valuable products from their SOCCA membership.

SOCCA Year End State of Financial Position

ASSETS	2023	2024	% change
Bank Accounts (First Business Bank: Checking & Savings)	201,840.02	273,727.43	35.62%
Accounts Receivable	135,115.71	593.25	-99.56%
Investments (Vanguard)	457,767.18	566,454.32	23.74%
Prepaid Expenses	900.00	5,824.00	547.11%
TOTAL ASSETS	**795,822.91**	**846,599.00**	**6.41%**

LIABILITIES	2023	2024	% change
Accounts payable	8,119.89		-100.00%
Credit Cards		13.88	0%
Accrued Expenses	97,266.57	-0.43	-100%
Deferred Dues*	71,025.26	66,245.76	-6.73
TOTAL LIABILITIES	**176,411.52**	**66,259.21**	**-62.44%**

**Deferred dues are dues that members have paid when joining mid-year prior to their year-long membership.*

NOTE: These numbers have been updated from what was presented at the 2024 IARS/SOCCA Annual Meeting. Please contact SOCCA with any questions.

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