

# INTERCHANGE

Society of Critical Care Anesthesiologists Newsletter Volume 35 | Issue 3 | September 2024

## President's Message

August was Charlie Parker Month, the month of the great musician's birth. I am, of course, a jazz fan, but Mr. Parker is also on my mind for his outstanding talent. He was among the foremost innovators in the most improvisational of music genres. This capability made him flexible, inspiring, and able to direct groups in productive and creative ways. Capabilities are the necessary support for achievement. Today, SOCCA is a nimble organization that is enhancing its capabilities.

Speaking of directing groups in productive and creative ways, we welcomed Jennifer Rzepka on board as our Executive Director around the turn of the year. She has been working behind the scenes to help us build our repertoire. We are performing our regular review of the bylaws, have a job fair coming up on October 2, and look forward to seeing many of you at the ASA meeting, where we will have a Critical Care Review moderated by former SOCCA president



**Mark E. Nunnally, MD, FCCM**  
President, SOCCA  
New York University  
Langone Medical Center  
New York, NY

Avery Tung. A lot of us are involved in the Critical Care track at the ASA conference, and it is a great example of how we add value to the ensemble.

Great things are ahead for our collaborations. A generous gift will allow us to present a joint Anesthesia Patient Safety Foundation/SOCCA lecture on patient safety, and we will again offer the SOCCA Innovator's award in 2025. Our

Perioperative Resuscitation and Life Support (PeRLS) collaboration with the ASA has been a great educational effort that has given perioperative providers a way to improve and validate their abilities, with more to come.

As a society, we keep a beat, harmonize with our constituents and other like-minded groups, keep up with chord changes, and, above all, look for ways to create something new and enduring. August is often a time to recharge before the crush of fall, but for SOCCA, it is just another great opportunity to play our tune our way. 🎵



**SOCCA  
Calendar**

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**Visit SOCCA's Calendar page!**

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# SOCCA Research Committee Update: *Driving Innovation and Collaboration Forward*

**A**s Chair of the SOCCA Research Committee, I am thrilled to share our latest progress and upcoming initiatives. Over the past months, our committee has been energized by the dedication and enthusiasm of our members, whose collaborative efforts have resulted in significant advancements in the field of critical care anesthesiology.

I have been fortunate to have Emily Vail, MD, MSc (University of Pennsylvania) as Vice Chair, with Matthew Warner, MD (Mayo Clinic) contributing his experience as Immediate Past Chair. The committee is composed of diverse, highly respected experts such as Jacob Basak, MD, PhD, Vijay Krishnamoorthy, and Michael Kiyatkin, among others, all dedicated to steering impactful research initiatives.

The committee also benefits from strong subcommittees like the Data Subcommittee, chaired by David (Josh) Douin, MD (Colorado), with Michael Kiyatkin serving as Vice Chair, and the Research Network Subcommittee led by Marc Lopez, MD, MS (Vanderbilt). These subcommittees are key to driving SOCCA's collaborative research goals.

New members have joined, bringing fresh perspectives, including Dusan Hanidziar, MD, PhD (Massachusetts General Hospital), Vikram Fielding-Singh, MD, JD (Stanford), and Jarva Chow, MD, MS, MPH (University of Chicago), enhancing the strength of this robust and forward-thinking committee. Together, the committee is well-positioned to continue making meaningful strides in research that enhances patient care and elevates the specialty.

The Research Committee has achieved several notable milestones over this last term. We've published key manuscripts addressing intensivists' burnout and the evolving clinical practice of critical care anesthesiologists, sparking important discussions within the community. The Speaker Exchange Program has been developed, offering SOCCA members new opportunities to present their work on interdisciplinary platforms, with more to come in this space, adding value to our membership. Additionally, our contribution to Anesthesiology Clinics has allowed us to delve deeper into critical topics, enriching the field with

comprehensive research insights.

Under the guidance of our Data Subcommittee, led by Josh Douin and recently joined by Michael Kiyatkin, we are advancing data collection methods with a focus on streamlining SOCCA homegrown surveys and fostering collaborative research efforts with other organizations. We are particularly excited about upcoming collaborative surveys with sister organizations, which will broaden the impact of our work.

The Scientific Writing Subcommittee, chaired by Kate Rosenblatt, is diligently working on a white paper that will outline key research priorities and directions for the future of our specialty. This will be a critical piece for aligning the research agenda across SOCCA, particularly in driving the development of essential ICU datasets.

Marc Lopez leads our efforts to enhance research infrastructure and networking. Through an ongoing needs assessment, we are identifying how best to support members with mentorship, collaboration opportunities, and specialized methodology training.

## Looking Ahead

Our committee is committed to continuing its momentum. With ambitious goals on the horizon, including new consensus guidelines, collaborations with the Women in Critical Care group, and initiatives aimed at increasing understanding of critical care needs for other subspecialties, we are confident that our efforts will continue to enhance the critical care anesthesiology landscape.

In closing, I want to express my deepest gratitude for the privilege of leading such an extraordinary group of professionals. The passion, collaboration, and innovative thinking within this committee are a testament to the thriving and growing SOCCA community. Here's to many more achievements as we continue driving forward the research that impacts the future of critical care anesthesiology. 🏠



**Shahzad Shaefi, MD, MPH**  
Associate Professor of  
Anesthesiology  
Harvard Medical School  
Boston, MA



# Nominations Committee Update

The strength of SOCCA lies in its members' incredible talent and energy. Volunteering is one of the best ways to contribute to the Society. Each year, the SOCCA Nominations Committee reviews nominees and prepares an election ballot for available Officer and Director positions. During this election cycle, we will elect four members for the Board of Directors (for a 3-year term). Further details about SOCCA's governance structure are outlined in our Society Bylaws.

We are excited to share with you that additional opportunities to serve the organization, such as committee involvement, will be communicated soon. In 2024, we will seek volunteers for our Communication, Education, Membership, and Research committees and the newly established Clinical Practice Committee.

Those interested in elected positions must submit a letter of interest, photograph, and curriculum vitae. The 2024 Call

for Volunteers will open on November 1, 2024, and close on December 31, 2024. The criteria for evaluating volunteer leaders can be found here: [VOLUNTEER LEADERSHIP SELECTION CRITERIA](#).

If you have any questions about the opportunities available within SOCCA, please contact SOCCA Society Director Jennifer Rzepka, CAE. She will ensure you are connected with the right SOCCA resource.

We look forward to your enthusiastic participation and thank you for your dedication to our community! 🏢



**Michael H. Wall MD,**  
**FCCM, FASA**  
*Chair, SOCCA*  
*Nominations Committee*  
University of Minnesota  
Minneapolis, MN

## SOCCA drip

**SOCCA Drip is a new online platform that offers member-generated content, spotlights member achievements, and delivers relevant news and updates from the broader critical care community—more frequently than ever before.**

- Our newsletter, *SOCCA Interchange*, will continue to highlight features from our members and news from within the organization.
- To reflect these changes, SOCCA's Main Menu has changed to include "Drip" under "News" on the main menu.
- All back issues of *SOCCA Interchange* are available [here](#).
- To explore contribution opportunities or share relevant professional or programmatic accomplishments, please contact the office: [info@socca.org](mailto:info@socca.org)

# “Is There a Doctor on Board?”

## A Primer on In-Flight Emergencies and Q&A with Dr. Ashish Khanna

In-flight medical emergencies (IMEs) are estimated to occur in 1 of every 604 flights; given the tremendous volume of global air travel, 260 and 1420 IMEs may occur daily.<sup>1</sup> Invariably, these events take place in a complex setting characterized by limited information and equipment. Many physicians have little personal experience responding to in-flight crises, and even seasoned anesthesiologist-intensivists will likely find these events challenging and stressful. This article briefly overviews clinical, logistical, and legal considerations relevant to managing in-flight medical emergencies.

### Likely Clinical Scenarios

Decreased air pressure, oxygen tension, immobility, and dehydration may predispose vulnerable patients to IMEs, particularly on longer-duration flights.<sup>2,3</sup> The most common medical events include syncope or near syncope (30%), gastrointestinal illness (15%), respiratory distress (10%), cardiovascular symptoms (7%) and stroke- or seizure-like symptoms (up to 5%, each).<sup>1</sup> Less frequent are trauma (5%), psychiatric symptoms (3%), substance abuse (3%), allergic reactions (2.3%), obstetric emergencies (1%), and cardiac arrest (0.2%).<sup>1</sup>

Unsurprisingly, medications and medical equipment available in flight tend to be limited. While airlines may choose to stock additional materials on board, the Federal Aviation Administration (FAA) minimum standards for emergency medical kits include limited quantities of IV access supplies, as well as PO and IV antihistamines, aspirin, nitroglycerine, and injectable epinephrine.<sup>1</sup> International standards vary.<sup>3</sup>

Although IME patient mortality is reportedly low (0.2%), serious morbidity is less well described. Flight diversions are required only in a minority of cases (4-13%).<sup>2,4</sup>

### IME Logistics

Physicians who respond to an IME are not expected to work alone. Flight crews are familiar with airline emergency protocols and are frequently trained in basic first aid, CPR, and AED use.<sup>4</sup> Serious medical events also warrant crew consultation with a ground-based physician affiliated with the airline or with a hired consultancy.<sup>3</sup> Indeed, a majority of IMEs are managed by flight crews and ground-based medical support without the assistance of on-board volunteers.<sup>1</sup>

Published data indicate that physicians represent approximately 50% of on-board IME responders, suggesting that nurses, emergency medicine technicians (EMTs) and midlevel providers are also often available to help provide care.<sup>2</sup> Ideally, IME volunteers will contribute their skills and defer to the recommendation(s) of the volunteer with the most relevant expertise. While stabilizing and managing a patient, clear and open communication with the flight and ground crews is essential.<sup>3</sup> In high-acuity situations, the consulting ground-based physician issues the final guidance regarding care, including the recommendation to divert the flight.<sup>1</sup> The captain of the aircraft is responsible for the decision to divert.

### Medicolegal Considerations

Many physicians may feel ethically obligated to respond to an IME. They may also feel confusion or concern regarding their legal responsibilities and protections. In the US, physicians are not required to respond to in-flight medical crises.<sup>1</sup> By contrast, several European countries and Australia do require physicians to offer their services, consistent with domestic civil and case law. Barring gross negligence or willful misconduct, US law affords IME responders protection under the “Good Samaritan” clause of the Aviation Medical Assistance Act.<sup>2</sup>

Of note, Good Samaritan status may be jeopardized if the physician accepts monetary or non-monetary compensation from the airline, including but not limited to mileage points, seat upgrades, and travel vouchers.<sup>5</sup> Obviously, a physician should not respond if intoxicated or otherwise incapacitated during the flight. Overall, litigation against IME volunteers is extremely rare, with some sources citing a single documented lawsuit between 1998 and 2017.<sup>2</sup> Indeed, a recent JAMA article concluded that “medical assistance rendered by a capable physician is of little personal legal risk and is supported by experts in aviation medicine.”<sup>1</sup>



**Margo Hoyler, MD**  
Assistant Professor of  
Clinical Anesthesiology  
New York-Presbyterian/  
Weill Cornell  
New York, NY

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## Conclusion

Due to the growing volume of air travel, including long-haul flights, in-flight medical emergencies are relatively common and are likely to become even more frequent. These events pose unique challenges for physician volunteers, including anesthesiologist-intensivists. When considering whether to volunteer their services, physicians may benefit from the knowledge that on-ground medical support is available, that clear and open communication with the flight crew is essential, and that medicolegal liability is limited.

### Responding to an IME

Recently, Dr. Ashish Khanna responded to an in-flight medical emergency on an international flight. Dr. Khanna helped to stabilize a teenage patient who seemed to have had a severe allergic reaction to food served in flight. Dr. Khanna recommended that the pilots divert the plane and land before crossing the Atlantic. The patient was evacuated and received on the tarmac by an awaiting medical crew.

Dr. Khanna answered the following questions regarding this recent event.

**Socca Interchange (SI):** What, if anything, surprised you about the experience of responding to an in-flight medical emergency?

**Dr. Ashish Khanna (AK):** When I heard the overhead message “we need a medical doctor,” I was not surprised. These things happen commonly on transcontinental flights. The most common problems are things like hypoglycemia in diabetics, an extra drink or two and feeling unwell, or at most a non-cardiac chest pain. This was different in that it was a child accompanied by a mother, who was herself travelling alone with two other younger kids, and who knew what was happening. By the time I saw the patient, he was clutching his neck and complaining that his chest was tight

and that his throat was closing. I did not have a lot of time to think through the situation.

After administering an Epi-pen, I asked the crew, out of my naiveté, if they had any airway equipment on board. I was surprised when they said no. Furthermore, I was surprised that they did not carry much to specifically control a potential anaphylaxis situation, e.g., no IV or oral steroids and no bronchodilators. We gave oxygen from the emergency oxygen tanks and used the bronchodilators and epi-Pens that the mom carried. After I established IV access, we gave diphenhydramine and metoclopramide. We had portable blood pressure and oxygen saturation monitors, which was nice.

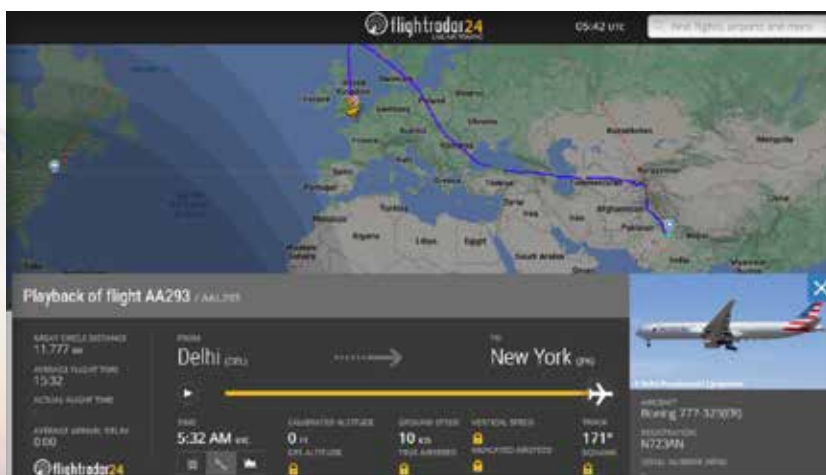
I was pleasantly surprised by the teamwork and help offered by the flight crew, co-passengers, and even the captain. I was assisted by a pediatric surgeon and a nurse who were also on the flight. Teamwork was critical, as was crowd control and quick assessment of the situation. I am thankful that we had a supportive and motivated team that did their best to help at all times during the crisis.

**SI:** What advice would you offer your fellow Intensivists, and particularly more junior colleagues, who might find themselves in a similar situation in the future?

**AK:** Assess the situation and take control. There is chaos, but you as critical care doctors, and specifically with a background in anesthesia, are the best equipped to run these as a team leader. Ask the crew and staff all your questions regarding supplies and what’s available and what’s not. Ask these questions early so you can plan your next move.

If the situation escalates, as it did here—the teenager did not respond to an initial round of interventions—talk to the captain to know where you are geographically and what you should advise the captain in the context of the patient.

In this case, I took a somewhat conservative decision to suggest that we divert to London instead of making the North Atlantic crossing with an unstable patient. I knew the patient would ultimately respond to treatment, but he could have also declined further. Once on the North Atlantic crossing, the nearest landmass would be 6 hours away. With no other resources, we could have been in a true emergency—for instance, needing an advanced airway and further equipment, but with nothing available to escalate.



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In short, my most important advice would be to be conservative and practice safe medicine when in such a situation. In retrospect, continuing on our way would have saved everyone a lot of hassle with flight cancellations, delayed returns to work, and missed connections. However, the flip side would have been a non-salvageable emergency over the mid-Atlantic. I would not have been able to forgive myself for that poor choice later on.

**SI:** *In what ways was managing the in-flight emergency most similar to, and most different from, your daily work as an Intensivist?*

**AK:** If this had been my patient in the ICU, I would have felt very much in control and not worried after administration of initial meds. Even if the response to medications had been less than robust, as it was here, I would be thinking about the next round of interventions and what I might need to do in case of further problems. This is where this situation was the same and yet different: all I had was a medicine box and basic supplies. I knew that these interventions needed to work. If they did not, I had nothing to fall back upon. From that perspective, this was stressful since the onus was on me, and I had to make 100% certain that my choice, even though defensive at the time, was the right choice for the child and his family.

**SI:** *What critical care knowledge and skills were most valuable in managing this in-flight emergency?*

**AK:** In terms of the basics, assessment of cardiorespiratory status during an acute anaphylactic reaction, management of acute severe bronchospasm, and initiation of IV access with fluid resuscitation.

**SI:** *How did you navigate sharing clinical decision-making responsibility with other physicians who responded in-flight, and with the airline physician on the ground?*

**AK:** I was put in touch with American Airlines ground control in Dallas, where I spoke with another physician. I did not know this at the time but I was told later that the physician on the ground takes over all liability since this person is employed by AA for exactly this purpose. The physician on the ground did rely heavily on me for my best judgment but definitely endorsed my call for the diversion once we reached a stage where the child did not seem to be responding to our initial interventions. The other team members (a pediatric surgeon from Chicago and a nurse from NYC) were constantly working with me, checking vitals, reassessing the child, and, most importantly, reassuring his mother that all would be okay.



**SI:** *What, if anything, would you do differently in responding to a similar situation in the future?*

**AK:** Every situation is different, and it's difficult to say what I would do for a similar situation in the future. There is nothing I would have really done very differently.

**SI:** *Is there anything else you would like to add about this experience?*

**AK:** Some things are “meant to happen.” Is it a true coincidence that I wore my SCCM [Society of Critical Care Medicine] shirt on the flight? I also had a bunch of rescue oxygen cylinders in the overhead bin exactly above my seat. I jokingly gestured to my co-passenger as I boarded, “I will not need these tonight - will I?” This was one such day when all these signs pointed to me and a day where I truly felt proud to be an anesthesiologist-intensivist. I love the specialty and would choose this many times over if given the chance! 🙏

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# Perioperative Use of Semaglutides: *More Questions than Answers*

**G**lobal prevalence for obesity and type 2 diabetes are continuing to rise, with special concerns for the very high prevalence of obesity (>25% of adults) and Type 2 diabetes (>13% of adults) in several regions of the Americas, Middle East and amongst Pacific Island communities. [1,2] Both obesity and Type 2 diabetes are associated with high susceptibility to development of several co-morbidities, including non-alcoholic fatty liver disease, cardiovascular and renal diseases, which are all major contributors to the premature mortality [3] Although weight loss can substantially reduce the risks and comorbidities associated with type 2 diabetes, it is notoriously difficult to achieve and maintain by changes in lifestyle alone [4]. Glucagon-like peptide-1 receptor agonists (GLP-1RAs) have now proved to be particularly effective as glucose-lowering and weight reducing agents in the management of overweight or obese type 2 diabetes, and are now widely available in most countries as once-daily and once-weekly injectable formulations.[5] Furthermore, recent evidence for their beneficial cardiovascular effects has elevated their importance in the treatment guidelines, especially for obese diabetic patients with atherosclerotic cardiovascular disease. [1]

There are currently three FDA-approved GLP-1RA agonists (semaglutides). Ozempic® injection and Rybelsus® tablets are approved to lower blood sugar levels in adults with type 2 diabetes mellitus, in addition to diet and exercise. Ozempic® is also approved to reduce the risk of heart attack, stroke, or death in adults with type 2 diabetes mellitus and known heart disease. Wegovy® injection is approved to help adults and children aged 12 years and older with obesity or some overweight adults, who also have weight-related medical problems. All three medications are only available with a prescription, and there are no approved generic versions as of now.

## Mechanism of Action

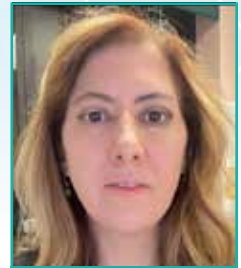
Semaglutides are long-acting GLP-1 RAs with 94 percent homology with native human GLP-1. GLP-1 is an endogenous hormone released from the proglucagon gene in L-cells of the distal small intestine and colon in response to oral nutrient intake. It then binds to GLP-1 receptors expressed in tissues such as the pancreatic beta cells, gastric mucosa, kidney, heart, and hypothalamus. This stimulates the secretion and release of insulin in hyperglycemic states, inhibits glucagon release in

hyperglycemic or euglycemic states, slows gastric emptying, and reduces food intake. Semaglutides, like GLP1, further promotes insulin secretion from beta cells in the pancreas and decreases glucagon secretion in a glucose-dependent manner. Unlike GLP1, which has a half-life of 1-2 minutes, the half-life of Semaglutide is 155-184 hours. Therefore, it leads to weight loss via reduced energy intake with minimal effects on energy expenditure. [2]

Several gastrointestinal side effects have been reported with the use of Semaglutides, such as nausea, vomiting, diarrhea, constipation, and decreased GI motility, Although the mechanisms behind these side effects are not fully understood.[3] Although long-acting GLP-1RAs slow gastric emptying, this effect is less pronounced than in short-acting GLP-1Ras [4,5]. In addition, the effect on gastric emptying depends on the dose and duration of medication use. Delay in gastric emptying is attenuated with dose escalation and with duration, which suggests possible tachyphylaxis, since delayed emptying occurs within 12 weeks of semaglutide use and then tends to subside or resolve after 20 weeks. [6]

## Semaglutides in the perioperative period

Current American Society of Anesthesiologists (ASA) recommendations call for holding GLP-1 agonists on day of the procedure for patients taking them daily, or one week before surgery for patients on weekly dosing. [7] On the day of the procedure, if the GLP1 agonists have been held appropriately and there are no gastrointestinal (GI) symptoms, then the patient can proceed with surgery. If the GLP1 agonists have not been stopped as instructed, but the patient has no GI symptoms, then they recommend considering the patient having a “full stomach” and performing a gastric point-of-care ultrasound (POCUS) (if



**Dana Darwish, DO, FAOCA**  
Division of Critical Care Medicine  
University of Texas Southwestern Medical Center  
Dallas, Texas, USA



**Kunal Karamchandani, MD, FCCP, FCCM**  
Division of Critical Care Medicine  
University of Texas Southwestern Medical Center  
Dallas, Texas, USA

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feasible) to evaluate for gastric contents. If the stomach is empty, then the recommendations are to proceed as usual, but if the stomach shows gastric contents on POCUS or if the POCUS exam is inconclusive, the recommendations are to consider delaying the procedure or proceeding with full stomach precautions. [7] If the patient has GI symptoms, such as severe nausea/vomiting/retching, abdominal bloating or abdominal pain, the recommendations are to consider delaying the procedure. If unable to, the ASA recommends proceeding with full stomach precautions and discussing the risk of regurgitation and aspiration with the patient and the surgical team.[7] These current guidelines allow patients to take their semaglutides with minimal disruption before surgery which leads to less hyperglycemic episodes and negates the need for bridging therapy. Furthermore, there are less reasons for cancellation of surgery, which can be disruptive to both patients and surgeons.

While the ASA recommendations provide some clarity on the perioperative use of GLP-1 RAs, there are several other factors that influence GLP-1RA-related delayed gastric emptying. These include the type of drug (i.e., short-acting vs. long-acting), the drug dose and duration of use, and glycemic control (good vs. poor control). Hence, there remains a concern for delayed gastric emptying and possibility of increased preoperative residual gastric volume. In obese women with polycystic ovarian syndrome, those receiving semaglutide retained 37% of solid meal after 4 hours, as compared with no gastric retention in the placebo group after 12 weeks of therapy.[8] Similarly, in a single-center retrospective chart review of patients undergoing esophagogastroduodenoscopy under deep sedation/general anesthesia, perioperative use of semaglutide was associated with increased residual gastric content (24.2% vs. 5.1%).[9] These findings support the hypothesis that semaglutide use is associated with delayed gastric emptying and increased residual gastric content, which can last up to a month after drug discontinuation. Finally, in a prospective randomized controlled trial by Sherwin et al [10], gastric POCUS was used to evaluate the presence of solid gastric contents in both supine and lateral positions after an eight-hour fast in those taking GLP-1RA compared with controls. In the lateral position, 90% of participants receiving semaglutide and 20% of control participants had solids identified on gastric POCUS (RR, 7.36; 95% CI, 1.13 to 47.7; P = 0.005). Two hours after drinking clear liquids, the gastric POCUS findings did not differ in the lateral position in the two groups, but in the supine position, 90% of control group participants were rated as empty compared with only 30% of semaglutide group participants. Therefore, suggesting that GLP-1RAs may affect gastric emptying and

residual gastric content following an overnight fast and two hours after consumption of clear liquids, which may have implications for aspiration risk during anesthesia. Given that the half-life of semaglutides is around one-week, longer interruption might be indicated. Perhaps, the timing of the last dose of GLP-1RA should be more than 11 days from surgery, especially in patients who have started the medication less than 20 weeks ago, considering that this is the timeframe when tachyphylaxis is observed. Currently, the ASA guidelines are the standard of care in most institutions, and these guidelines call for holding long acting semaglutides only one week before surgery. However, we make an argument that further studies are needed to further evaluate the appropriate dosing of semaglutides in the perioperative period, and that the ASA guidelines in its current form should be applied on a case-by case basis.

### Semaglutides in critical illness

Patients on semaglutides may present to the intensive care unit (ICU) with critical illness, and the implications of chronic use of these drugs on morbidity and mortality in this subgroup of patients is unclear. Furthermore, the impact of long-acting GLP-1 RAs on glycemic control in critically ill patients remains poorly understood. Whether the critical illness induced gastroparesis is accentuated by these drugs is also not clear. While it makes sense to hold these drugs during the acute phase of critical illness, implications of abrupt discontinuation, and the timing of restarting them are also areas that need further exploration. Currently there is limited data, and no specific guidelines or recommendations for managing patients in the ICU that use these medications chronically. Nonetheless, the ICU team should be aware of their side effects (diabetic neuropathy, hypoglycemia, baseline increased heart rate, gastroparesis, pancreatic disease, acute kidney injury etc.) and how they can adversely affect patient outcomes. Future studies are indeed needed to better guide care for these patients in the intensive care setting. 🏠

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# NOW AVAILABLE!

## NEW SOCCA SOCIAL MEDIA PAGES!

# FACEBOOK LINKEDIN



# Program Director Q&A

Dr Matt Wiepking is the Program Director for the Anesthesia Critical Care Medicine Fellowship at the Los Angeles General Medical Center and the University of South California, he has served in this role for the past 2 years.

**Dr. Pannu:** *What are some of your favorite parts of being a critical care medicine fellowship program director?*

**Dr. Wiepking:** The program design and improvement aspect is hugely satisfying, and you get to see the ripples of your efforts across the institution's larger educational and clinical environment. Mostly, though, I enjoy being a resource and a sounding board as our fellows navigate the highs and lows of fellowship—as we all know, ACCM fellowship is a challenge on many levels! There is something very unique and powerful about seeing our fellows go from figuring it all out in July, to leaders in the ICU by the end of their training. Recruitment time- when we meet all the residents interested in critical care- is also always a blast!

**Dr. Pannu:** *What are some challenges program directors are facing today?*

**Dr. Wiepking:** Fellowship recruitment remains challenging- which is not a surprise to most readers of the Interchange. The pandemic brought CCM to the front and energized many people but also highlighted the rigor and demands of this job and highlighted how we must continue to make this sustainable. More recently, the job market for anesthesiologists has been very favorable, often cited as a factor for decreased interest in subspecialty training overall. However, there are many reasons to be optimistic about this year's Match as well (see Dr Fiza's piece for more info!)

As a program director, I would also love to see some ongoing focus on highlighting and exploring careers outside academics for Anesthesia Critical Care. Intensivists are needed everywhere, and our training prepares us to succeed across the critical care landscape. The Intensivists in Private Practice and similar groups are key to highlighting intensivists' role in non-academic practice models.

**Dr. Pannu:** *What advice would you give to medical students and residents considering a career in critical care medicine? What is something you wish you had known?*

**Dr. Wiepking:** The most significant thing is that critical care contributes significantly to my personal and professional satisfaction. While undoubtedly a challenging field because of the complexity and degree of illness and the emotional toll on patients, family, and staff, you also have some incredible highs of seeing your patients get better, get stronger, and get home. Working in the ICU allows us to

engage in the full spectrum of care and connect on a deeper level with the journey our patients and their loved ones go through as we face critical illness together.

My advice to our medical students and residents thinking about a career in critical care would be to reach out and ask questions. Talking with fellows and faculty who embarked on this amazing path helped me visualize what my life and career can look like, so I recommend getting informed and embracing the differences in practice that critical care can offer you. Yeah, you'll round—so what? You'll also come out highly knowledgeable and capable in an actual crisis and be given plenty of opportunity to push your EQ higher. Clinical skills, life skills, balloon pumps, bowel regimens—we have it all. Apply today.

**Dr. Pannu:** *What are some advances you foresee in the practice of critical care medicine? What role do you foresee critical care anesthesiologists and SOCCA playing?*

**Dr. Wiepking:** Anesthesia-trained intensivists bring immense value to any ICU thanks to their deep understanding of hemodynamics, procedural skill, and often the uniqueness of their perioperative experience. They have led the field in training physicians from multiple disciplines and I hope that this continues.

Secondly—and I'll show my bias here as someone who got hooked into this world from fellowship on—I think there's a lot of energy going into temporary circulatory support. I am interested in seeing how those technologies may become more durable and portable. There are some really challenging, emotionally charged, and ethically complex realities that arise as these technologies become more effective at generating and maintaining perfusion. Given that anesthesia-trained intensivists often work in units that use these technologies, we have a significant role to play in advocating how to address this frontier in medicine and bring our referring physicians, consultants, patients, and families together to develop a shared mental model of how and when to use these powerful tools. 🏠



**Aneeka Pannu, MD**  
Program Director,  
Critical Care Fellowship  
Beth Israel Deaconess  
Medical Center  
Boston, MA



**Matthew Wiepking, MD**  
Program Director,  
Anesthesia Critical Care  
Medicine Fellowship  
Keck School of Medicine  
of the University of  
Southern California  
Los Angeles, CA



# Women in Critical Care - Member Spotlights

The WICC Member Spotlight highlights our members' day-to-day work lives. How do our members "do it all"? Balance their busy work life with their interests outside of work. These profiles highlight that although practicing as an Anesthesiology Critical Care attending may seem daunting as a trainee, it is a challenging yet fulfilling specialty. Some days may be humdrum, with more straightforward cases like routine postoperative patients requiring weaning from mechanical ventilation. In contrast, on another day, you may be performing a massive transfusion on a trauma patient or initiating ECMO on a patient with acute respiratory failure. 🏠



**May Hua, MD**  
Co-Chair, SOCCA  
Women in Critical Care  
Working Group  
CUIMC/Presbyterian  
Hospital and Vanderbilt  
Clinic  
New York, NY

## CLICK EACH INDIVIDUAL TO WATCH THEIR VIDEO!



**Joy Chen MD, FASA, FCCM**

Associate Professor of Anesthesiology  
Department of Anesthesiology and Pain  
Management  
UT Southwestern Medical Center  
Dallas, TX



**Shahla Siddiqui,  
MD, MSc, FCCM**  
Co-Chair, SOCCA  
Women in Critical Care  
Working Group  
Beth Israel Deaconess  
Medical Center  
Harvard Medical  
School  
Boston, MA

**Carlee Clark, MD**

Chief, Anesthesia Integrated Clinical Center of  
Excellence (ICCE), Vice Chair of Clinical Operations,  
Professor of Anesthesia and Perioperative Medicine,  
Division of Critical Care  
Medical University of South Carolina  
Charleston, SC



**Beth M. T. Teegarden, MD, FASA**

Associate Professor  
Department of Anesthesiology  
Division Chief, Critical Care Medicine  
Medical Director, Surgical Intensive Care Unit  
University of Texas Medical Branch  
Galveston, TX





# SOCIETY OF CRITICAL CARE ANESTHESIOLOGISTS

6737 W Washington St | Ste 4210 | Milwaukee, WI 53214

Office: 414-363-9171 | Fax: 414-755-1346 | info@socca.org | www.socca.org

## September is **Women in Medicine Month!**



We at SOCCA would like to invite you to join Women in Critical Care—our initiative to form a women’s group within the ACCM community.

Recent times have been challenging for the critical care community, yet it has brought us to the forefront of providing excellent and evidence-driven care for the sickest of all patients. Teamwork and resilience have been the mainstay of our efforts. However, at the same time, the pandemic and its fallout have shown our community’s crevices with high rates of burnout. Women intensivists have been facing the brunt of many of these issues.

We at SOCCA would like to invite you to join Women in Critical Care—our initiative to form a women’s group within the ACCM community. (Both SOCCA members and non-members are welcome, although within one year of joining we will expect non-members to make a membership commitment to SOCCA.)

Similar to groups such as Women in Cardiothoracic Anesthesiology (WICTA) and Women in Anesthesiology (WIA), Women in Critical Care is aimed at delivering academic advancement, networking, and a social community to anesthesia trained women in critical care, as well as others who wish to advance women in academics.

We aim to meet quarterly, maintain a presence on the SOCCA website and within the Interchange newsletter, formulate a list of potential speakers and panelists, and reach out to editors for special issue authorships.

**More Information:** [socca.org/women-in-critical-care](http://socca.org/women-in-critical-care)



**WOMEN IN CRITICAL CARE**  
QUALITY + COMPASSION + BENEVOLENCE

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# Update on the Brain Death and Death by Neurological Criteria 2023 Guidelines

In 2023, the American Academy of Pediatrics, Child Neurology Society, Society for Critical Care Medicine and the American Academy of Neurology released an updated set of guidelines for Brain Death/Death by Neurologic Criteria (BD/DNC). These were the first guidelines to provide recommendations for both adult and pediatric patients. Though many of the recommendations are similar, there are several important updates.

The complete set of updated guidelines is listed below. Highlights include the following:

- The 2023 guidelines require *both* minimum systolic blood pressure and mean arterial pressure
- Observe for at least 24-48 hours after insult or surgery or initial therapies to address ICP before initiating testing
- Wait at least 24 hours after rewarming before initiating testing
- Evidence of neuroendocrine function does not preclude testing (for e.g diabetes insipidus)
- Ancillary testing should not be used in the setting of hypothermia, high levels of CNS depressing medications, solely because of the presence of an open fontanelle, skull fracture, skull defect, or cerebrospinal fluid diversion device
- Electroencephalography and auditory-evoked potentials are no longer considered acceptable ancillary tests
- No obligation to obtain consent prior to testing
- Pregnancy is not a contraindication to BD/DNC evaluation

## Prerequisites for clinical examination

1. Patient has sustained a catastrophic, permanent brain injury caused by an identified mechanism that is known to lead to BD/DNC
2. Neuroimaging consistent with mechanism and severity of brain injury (in patients with primary posterior fossa injury, neuroimaging should demonstrate catastrophic supratentorial injury)
3. Observation of permanency
  - d. Greater than or equal to 48 hours after acute brain injury in patients less than 2 years old
  - e. Greater than or equal to 24 hours after hypoxic ischemic brain injury if greater than 2 years old
  - f. Enough time after injury to ensure there is no potential

for recovery of brain function as determined by the evaluator based on the pathophysiology of the brain injury

4. Core body temperature greater than or equal to 36 degrees Celsius (for greater than 24 hours in patients whose core temperature has been less than 35.5 degrees Celsius)
5. Systolic blood pressure greater than or equal to 100 and mean arterial pressure greater than or equal to 75 and greater than or equal to 5<sup>th</sup> percentile for age in children, for patients on ECMO – MAP greater than or equal to 75 and greater than or equal to 5<sup>th</sup> percentile for children
6. Exclusion of pharmacologic paralysis if administered or suspected through train of four stimulation or demonstration of deep tendon reflexes
7. Subtherapeutic/therapeutic drug levels of agents that may depress the central nervous system or at least five half-lives have passed since last administration
8. Alcohol blood level less than or equal to 80
9. Urine/blood toxicology is negative (if clinically indicated)
10. Exclusion of severe metabolic, acid-base, and endocrine derangements
11. Reasonable attempt has been made to contact family and inform them of plan for BD/DNC testing

## Clinical exam

1. Coma with unresponsiveness to visual, auditory, and tactile stimulation
2. Absent motor responses, other than spinally mediated reflexes, of the head/face, neck, and extremities after application of noxious stimuli to the head/face, trunk, and limbs
3. Absent pupillary responses to bright light bilaterally
4. Absent oculoccephalic reflex (unless concern for cervical spine integrity)
5. Absent oculovestibular reflexes bilaterally
6. Absent corneal reflexes bilaterally



**Alisha Sachdev, MD**  
Associate Professor  
Rush University  
Chicago, IL

- 7. Absent gag reflex
- 8. Absent cough reflex


**Apnea test**

- 1. No hypoxemia, hypotension, hypovolemia
- 2. pH is normal (7.35-7.45) and PaCO<sub>2</sub> is normal (35-45) or if the patient is known to have chronic hypercarbia, PaCO<sub>2</sub> is at baseline (if known) or estimated baseline
- 3. PaO<sub>2</sub> > 200

Apnea confirmed if no respirations and pH < 7.3 and PaCO<sub>2</sub> > 60 and >20 above pre-apnea test baseline

Ancillary testing is required if patient is known/suspected to have chronic hypercarbia, but baseline PaCO<sub>2</sub> is not known.

**Ancillary testing options in the 2023 guidelines include:**

- 1. Conventional 4-vessel catheter angiography (digital subtraction angiography)
- 2. SPECT radionuclide perfusion scintigraphy or planar radionuclide angiography
- 3. Transcranial doppler ultrasonography 

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# S O C C A eLearning

## 2024 S O C C A WEBINAR SERIES



# Cardiothoracic Critical Care Training - The Evolving Landscape

## Critical Care Medicine and its growth:

Over the past few decades, critical care medicine has rapidly evolved into the cornerstone of modern healthcare. The recent pandemic made us aware of the need for critical care specialists. The demand for intensive care services has continued to rise in response to the increasing complexity and acuity of both medical and surgical conditions. This escalating need globally is reflected by the increased proportion of hospital beds allocated to intensive care units (ICUs), highlighting their essential role in managing life-threatening conditions. Critical care physicians are at the forefront of managing an increasing population of patients facing life-threatening conditions and are tasked with leading multidisciplinary care of these patients, applying cutting-edge medical and technological support in the most challenging clinical scenarios.

## Role of Critical Care Anesthesiology

Critical care anesthesiology stands at the intersection of perioperative medicine and intensive care.<sup>1</sup> Globally, many intensivists are trained anesthesiologists, reflecting the natural overlap between these disciplines. Anesthesiologists excel in critical care due to their proficiency in managing complex physiological states, extensive pharmacology knowledge, expertise in advanced airway management, hemodynamic monitoring, and life-sustaining technologies. In many countries, anesthesiologists are not only the backbone of perioperative care but also serve as leaders in critical care, where they apply their skills to critically ill patients, whether pre- or post-surgical or experiencing medical emergencies. The training of an anesthesiologist equips them to care for critically ill patients in both pre- and post-surgical contexts, as well as in medical emergencies. This dual competency allows anesthesiologist to manage the full spectrum of critical illness improving outcomes across various domains of care.

## Cardiothoracic Intensive Care Unit

In 1956, the first ICU dedicated to postoperative cardiac surgery patients was established at Saint Mary's Hospital in Minnesota, marking a pivotal moment in the evolution of cardiac critical care.<sup>2</sup> Since then, the characteristics of patients admitted to cardiothoracic surgical intensive care units (CTICUs) have evolved dramatically. Modern CTICUs are not only focused on traditional cardiac and thoracic surgeries but also treat a wide variety of complex aorto-vascular pathologies, structural heart disease, multi organ transplants and various forms of shock. The use of

mechanical circulatory devices has become routine further expanding the scope of care. As the complexity of care continues to increase cardiothoracic critical care continues to evolve requiring advanced competencies. The American Heart Association now recommends dedicated cardiac critical care intensivists, recognizing the increasing complexity and specialized care required for these patients. This endorsement highlights the growing need for intensivists with expertise in this critical area.<sup>3</sup>

## Anesthesiologists as Leaders in Cardiothoracic Critical Care

In the early days of CTICU surgeons primarily led the management of these specialized units. However, in the past few decades, anesthesiologists have increasingly assumed a pivotal role in caring for patients in these highly specialized units. A recent survey revealed that up to 70% of critical care anesthesiologists now practice within CT-ICUs, highlighting the growing prominence of this discipline in the management of complex cardiac and thoracic surgical patients.<sup>4</sup>

Anesthesiologists are uniquely equipped for this role due to the comprehensive training they receive during residency, which typically includes rotations in critical care (minimum of four months), cardiac anesthesiology (two months), and thoracic anesthesiology (one month). This training provides a solid foundation in advanced airway management, invasive monitoring, and basic echocardiography. Additional exposure during anesthesiology critical care fellowships, with two to four months of CTICU-specific training, further equips anesthesiologists with the specialized skills needed to care



**Bhoumsh Patel, MD, MHS**  
Co-Director, Yale  
ECMO program,  
Assistant Professor of  
Anesthesiology  
Yale School of Medicine  
New Haven, CT



**Jose Duarte, MD**  
Assistant Professor of  
Anesthesiology  
Yale School of Medicine  
New Haven, CT



**Ranjit Deshpande, MD, MBA, FCCM**  
Vice Chair - Finance  
& Strategy, Director  
of Transplant  
Anesthesiology,  
Associate Professor of  
Anesthesiology  
Yale School of Medicine  
New Haven, CT

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for critically ill cardiothoracic patients. This comprehensive exposure to cardiac critical care, combined with the breadth and depth of training, positions anesthesiologists to excel in CTICUs and significantly contribute to improved patients' outcomes. However, given the increasing complexity of patients within CTICUs, subspecialized training beyond the scope of general cardiothoracic critical care is essential to meet the demands of modern practice and optimize patient outcomes.<sup>5</sup> Expertise in advanced hemodynamics, both perioperative transthoracic and transesophageal echocardiography, managing complex shock states, and most importantly, the proficiency in the full spectrum of mechanical circulatory support devices from decision making to weaning is essential to optimize outcomes and meet the evolving demands of cardiothoracic critical care.

### **Key Competencies: Advanced Hemodynamics, Echocardiography and Mechanical Circulatory Support**

Basic competencies in cardiothoracic critical care have already been proposed.<sup>5</sup> In addition to these, it is critical for intensivists to master advanced hemodynamics and shock management, perioperative and critical care echocardiography, and possess proficiency in managing mechanical circulatory support devices to meet the demands of modern CTICUs. These advanced competencies allow intensivists to deliver high-level care for patients with complex shock states or advanced heart failure, where precision and expertise in life-support technologies are paramount.

### **Current Educational Pathway and Challenges**

Currently, most anesthesiologist-intensivists practicing in CTICUs are board certified in critical and some have additional training in cardiothoracic anesthesiology. Over the past decade, there has been a notable increase in critical care anesthesiology fellowship programs and positions. Furthermore, the number of trainees pursuing dual fellowship training in cardiothoracic and critical care anesthesiology has increased, underscoring the importance of a combined skill set. However, despite these, significant challenges remain in formalizing a standardized training pathway. One major challenge is the considerable variability among fellowship programs, particularly regarding case variety exposure and educational curricula. This inconsistency may limit the development of the comprehensive expertise. Additionally, the lack of standardized case benchmarks and competency assessments results in disparities in skill acquisition. There is a need to address these challenges

and establish uniform competencies, training pathways and standardizing curricula to ensure that the future anesthesiologists are well equipped to meet the evolving demands of cardiothoracic critical care.

### **Proposed Pathway**

We propose the following pathways based on the literature coming out of the cardiology critical care training pathways to cardiothoracic critical care, emphasizing a core foundation in critical

care medicine (Figure 1). Both pathways are designed to ensure comprehensive training in the critical areas of cardiothoracic intensive care, focusing on advanced hemodynamics and shock management, perioperative and critical care echocardiography, and the management of mechanical circulatory support devices. These pathways provide a structured yet flexible framework, allowing trainees to develop expertise tailored to their career goals. Integrating robust training experience with these pathways aims to produce clinicians capable of excelling in the rapidly evolving field of cardiothoracic critical care. A similar pathway could be considered for anesthesiologists considering a career in transplant or obstetrics critical care.

### **Conclusion**

The increasing complexity of patients in CTICUs underscores the growing demand for cardiothoracic intensivists with a multidisciplinary skill set. Anesthesiologists with our robust foundation in perioperative and critical care medicine are uniquely positioned to meet this demand. We should work towards refining training pathways and addressing goals in educational structures to better prepare future anesthesiologist intensivist to manage the nuances of CTICU care. and drive innovation in this field. We call upon the American Board of Anesthesiology, the American Society of Anesthesiologists, Society of Critical Care Medicine, the Society of Critical Care Anesthesiologists, and the Society of Cardiovascular Anesthesiologists to collaborate on establishing clear competencies and structured curricula to address the growing unmet need for highly trained cardiothoracic intensivist, ensuring better patient outcomes and leadership in this evolving field. <#>

*continued on page 16*



**Figure 1**

Cardiothoracic Critical Care		
<b>Foundational Training</b>	<b>Anesthesiology (4 years) *</b> Critical Care – 4 months Cardiac Anesthesiology – 2 months Thoracic Anesthesiology – 1 months	<b>Anesthesiology (4 years) *</b> Critical Care – 4 months (PGY 1-3) Cardiac Anesthesiology – 2 months Thoracic Anesthesiology – 1 months Critical Care – 6 months (PGY 4)
<b>Subspecialty Fellowship Training</b>	<b>Integrated Critical Care Medicine (1 yr.) #</b> CTICU –5months ICU- 5 months Electives -1month	<b>Cardiothoracic-Critical Care Anesthesiology (1 yr.)</b> CTICU – 3 months Cardiac Anesthesiology – 6 months Thoracic Anesthesiology – 1 month Electives -1month
<b>Focused Training</b>	<b>Advanced Hemodynamics and Shock                      Advanced Perioperative and Critical Care Echocardiography (TTE/TEE)                      Mechanical Circulatory Support</b>	
	Total CCM Experience: 13 months	
<b>Certifications</b>	Anesthesiology Board Certification Critical Care Medicine NBE (PTEeXAM, CCEeXAM) Society-Based Cardiothoracic Certification (SCA, SOCCA)	Anesthesiology Board Certification Critical Care Medicine Adult Cardiac Anesthesiology NBE (PTEeXAM, CCEeXAM) Society-Based Cardiothoracic Certification (SCA, SOCCA)

\*- Anesthesiology training should provide a total of a year of echocardiography training between electives, cardiothoracic anesthesiology, and critical care training.

# Integrated training focuses on cardiac critical care with touchpoints with other critical care subspecialties.

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# SOCCA Information

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Meetings: [SOCCAm Meetings@iars.org](mailto:SOCCAm Meetings@iars.org)

Membership information: [SOCCA@iars.org](mailto:SOCCA@iars.org)

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Membership in SOCCA is open to all anesthesiologists who have an interest in critical care medicine; nonanesthesiologist physicians and scientists who are active in teaching or research relating to critical care medicine; residents and fellows in approved anesthesiology programs; and full-time medical students in an accredited school of medicine.

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