



# INTERCHANGE

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## President's Column



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With this issue, the *SOCCA Interchange* editorial board is excited to launch a new bi-annual section for the Society's newsletter. We have named this new section, "A Brief Conversation with..." The goal is to attempt, through personal interviews, to glean important insight for residents, fellows and active members as we all move forward in our careers as critical care anesthesiologists. In this, we hope to identify common themes for success through understanding the personal and professional steps (and possibly mis-steps) that have brought some of the most influential members of the Society of Critical Care Anesthesiologists (SOCCA), including its officers, board members, and previous and current Lifetime Achievement Award Winners, along their current and future paths in our chosen field. The authors of the section will attempt to distill the contents of the interviews for the readers of this newsletter. We hope you will enjoy this new section and find it to be useful to you.

## A Brief Conversation with Dr. Aryeh Shander

### 1. What was the biggest hurdle you faced in your transition from a fellow to your first position as a critical care specialist?

I don't know that I had any really significant difficulties transitioning to my first job after my critical care fellowship. My course from student to critical care anesthesiologist was rather circuitous and included an internal medicine residency, followed by a year as chief resident in internal medicine and then a short period as a private practitioner. Through this, I realized that many of my interests in the care of patients aligned more with the specialty of critical care medicine rather than a private practice internist. My interest in anesthesiology followed my critical care training. In addition to providing me a somewhat unique view of our specialty, this circuitous path also allowed me to understand what drove me in the care of patients and ultimately led me to the specialty of anesthesiology critical care medicine.

### 2. How did you find or connect with the person you would describe as your "best" or "most important" mentor? Why do you consider this person to be so important in your life?

My fellowship program director was the most important mentor for me, especially early in my career. My relationship with him grew out of the connection that started while I was a fellow and, for me, he was the person I looked up to for guidance and whose recommendations were always backed up with proof either through published research findings or personal anecdotes. In addition, he was

always available for quick or lengthy discussions about my career, my life or any other random topic.

### 3. Compared to when you first started your career, what is the biggest clinical "problem" that we are still trying to deal with today?

Well, I would have to say that we are still challenged by the line between trying to just "fix" a patient's health problems and working to cure the patient's disease, based on patients' understanding of their diseases and their likely long-term course. As we all know, but may not adequately address with patients or their families, this is frequently complicated

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## A Brief Conversation with Dr. Aryeh Shander

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by socioeconomic, ethnic, cultural and other non-medical but intensely-related issues. Our inability to wrap our arms around these related etiologies of disease on a daily basis remains a serious dilemma. This is, perhaps, best expressed in the book, *The Spirit Catches You and You Fall Down* by Anne Fadiman, in which the story of a young girl with epilepsy is told from the perspective of her doctors, as well as, her refugee family and their Laotian Hmong culture.

#### 4. What would you describe as your biggest professional mistake?

My biggest mistake has probably been the realization of my clinical and research interests too late in my academic life. Because of my somewhat circuitous route to Anesthesiology Critical Care as a specialty, it's taken me awhile to fully understand my varied interests. To some degree, however, it's not that

I recognized my varied interests too late ... it's that I thought I was too late in my career to develop a formal or informal plan to address these interests. In reality, we all need to continuously evaluate and re-evaluate our interests and push for changes in our lives. So although I might consider this a "mistake," in hindsight, it's never truly too late. I try to transmit this lesson to both the fellows and junior faculty in my program.

#### 5. What do you see as the greatest challenges for Anesthesiology Critical Care medicine over the next decade?

I see the greatest challenge for our profession (and the most important statement we can all make) is the development of a more "humanistic and patient-centric" approach to patients in an increasing environment of automation, information technology, social media and

a drive for a "one size fits all" approach. The data-driven environment may be threatening clinical acumen rather than strengthening this skill. As critical care anesthesiologists we are well positioned to transmit this message to generations to come.



This interview was conducted by:  
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### A Note from the Editor to SOCCA Members:

If you would like to contribute a review for a Fellowship Program at your institution in a future issue of the *SOCCA Interchange*, please contact: [jbrandmd@gmail.com](mailto:jbrandmd@gmail.com).

## High-Flow Nasal Oxygen for Respiratory Failure: Should “Less Invasive” Be the New Standard?

Frat J-P et al. High-flow oxygen through nasal cannula in acute hypoxemic respiratory failure. *New Eng J Med* 2015, 372(23): 2185-96.



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Endotracheal intubation and mechanical ventilation has a long track record as a lifesaving therapy in the treatment of respiratory failure. In recent years, however, more non-invasive therapies have been examined to treat this condition with the goal of avoiding endotracheal intubation altogether and potentially improving outcomes. Non-invasive positive pressure ventilation (NIPPV), the most validated of these therapies, has been shown to be effective in reducing morbidity and mortality in exacerbations of chronic obstructive pulmonary disease (COPD)<sup>1</sup> and cardiogenic pulmonary edema.<sup>2</sup> However, its benefits are not as well established in other situations, particularly those that do not involve hypercapnea.

One newer alternative to invasive ventilation and NIPPV is oxygen delivered via high-flow nasal cannula (HFNC). This technique utilizes a special air-oxygen blender and humidifier that can achieve gas flows several times greater than minute ventilation. This high flow rate provides a high inspired oxygen concentration, some slight positive end-expiratory pressure (PEEP), washout of carbon dioxide from the upper airway, which can reduce work of breathing, and effective humidification, which aids in secretion clearance. While studies have demonstrated that HFNC can result in improved

oxygenation and comfort in a variety of medical conditions, it has not previously been shown to reduce rates of intubation or mortality.

The recent study by Frat and colleagues was designed to examine whether HFNC could improve outcomes in acute hypoxemic respiratory failure. The investigators enrolled patients at 23 sites in France and Belgium who had a respiratory rate greater than 25 breaths per minute, a PaO<sub>2</sub>:FiO<sub>2</sub> ratio of 300 or less while on at least 10 liters per minute (LPM) of oxygen, a PaCO<sub>2</sub> less than 45 mm Hg, and no history of chronic respiratory failure. Exclusion criteria were asthma or chronic respiratory failure, cardiogenic pulmonary edema, severe neutropenia, hemodynamic instability, vasopressor use, a Glasgow Coma Scale less than 13, contraindications to noninvasive ventilation, “do not intubate” status, or patient refusal.

Patients were randomly assigned to one of three treatment groups: oxygen at 10 LPM via a nonbreather face mask, a high-flow humidified system with a starting gas flow of 50 LPM, or NIPPV with pressure support titrated to achieve 7-10 mL/kg of predicted body weight and initial PEEP of 2-10 cm H<sub>2</sub>O. In each group, FiO<sub>2</sub> (and PEEP if applicable) were titrated to keep SpO<sub>2</sub> greater than 91%. After two days, patients in the HFNC and NIPPV groups could be switched to standard oxygen if appropriate. Patients in the NIPPV group were to receive at least 8 hours of NIPPV per day for the first two calendar days; between sessions of NIPPV, they were administered high-flow nasal oxygen. The decision to intubate a patient was made based on pre-determined criteria: hemodynamic instability, deteriorating mental status, respiratory rate greater than 40 breaths per minute, pH less than 7.35, SpO<sub>2</sub> less than 90%, worsening secretions, and failure of respiratory workload or oxygenation to respond to therapy.

The study's primary outcome was rate of intubation. Other secondary outcomes included ICU mortality, 90-day mortality, ventilator-free days, ICU length-of-stay, complication rate, and subjective ratings of dyspnea and comfort. The authors performed a post hoc analysis examining patients with severe hypoxemia, as defined by a PaO<sub>2</sub>:FiO<sub>2</sub> ratio less than 200. All analyses were performed based on intent to treat.

From a pool of 525 eligible patients, 310 were included in the study and subsequent analysis; 94 were assigned to standard oxygen, 106 to HFNC, and 110 to NIPPV. Baseline characteristics were similar between groups. The most common cause of respiratory failure was community-acquired pneumonia (CAP), which was the primary diagnosis in 64% of patients; hospital-acquired pneumonia (HAP) was a distant second with 12%. The intubation rates were statistically similar between groups: 47% for standard oxygen, 38% for HFNC, and 50% for NIPPV. However, in a post-hoc analysis examining the 238 patients with a PaO<sub>2</sub>:FiO<sub>2</sub> ratio less than 200, the HFNC group had a significantly lower rate of intubation (35% vs. 53% for standard oxygen and 58% for NIPPV, p=0.01). In both the overall and post-hoc analyses, HFNC patients also had more ventilator-free days than patients in the other groups.

When other secondary outcomes were examined, treatment with HFNC was associated with significantly lower risk of death in both the ICU (RR=1.85 vs. standard oxygen; RR=2.55 vs. NIPPV; p=0.047) and at day 90 (RR=2.01 vs. standard oxygen; RR=2.50 vs. NIPPV; p=0.02). Respiratory discomfort and dyspnea were lower in the HFNC group, and serious adverse events did not differ in frequency between groups.

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## High-Flow Nasal Oxygen for Respiratory Failure

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So how are we to interpret these results? First, it certainly seems that HFNC is an acceptable, and possibly superior, therapy for patients with hypoxemic respiratory failure without significant hypercapnea. This study was well-designed, with concrete criteria to guide decisions on intubation and extubation, and the groups were well-matched. It had an adequate number of participants and was multi-center. While the trial could not be fully blinded, this is an inherent limitation of examining the treatment modalities involved. The decrease in intubation in individuals with more severe hypoxemia is intriguing, but as part of a post-hoc analysis, it should be treated with some caution. On the other hand, this finding jibes with the reductions in ventilator days and mortality found in the HFNC group, so it seems plausible.

*“This study was well-designed, with concrete criteria to guide decisions on intubation and extubation, and the groups were well-matched.”*

Such findings, while tantalizing, do necessitate an evaluation of whether the results are generalizable or the product of details unique to this study. For instance, it is unclear why Frat and colleagues found

no benefit of NIPPV over standard oxygen therapy in this patient population. Other investigators have found that NIPPV performs better than standard oxygen therapy in preventing intubation, reducing length-of-stay, and even reducing mortality in patients with acute hypoxemic respiratory failure.<sup>3,4</sup> One possibility is that patients in the NIPPV group were ventilated with excessively large tidal volumes; their mean tidal volume was greater than 9 ml/kg of ideal body weight. This could have exacerbated lung injury and reduced the benefits one would expect from NIPPV. It is also possible that the study population may have played a role. The majority of Frat et al.’s subjects were hospitalized with pneumonia, and pneumonia has been associated with greater failure rates when NIPPV is applied for hypoxemic respiratory failure.<sup>5</sup> This may be due to the additional difficulty use of NIPPV can add to secretion clearance, which is conversely one of the potential benefits of HFNC. While some studies have still found NIPPV beneficial in hypoxemic respiratory failure from pneumonia,<sup>3</sup> this is not consistent, and such variability could reconcile Frat et al.’s results with preexisting evidence.

So, in summary, it appears that treatment with HFNC can be recommended as an approach in patients with hypoxemic respiratory failure, especially in those with more severe hypoxemia. In addition to potential mortality

benefits, this technique affords improved comfort for those who may not tolerate NIPPV, and indeed may be superior to NIPPV in some respects. Patients with exacerbations of pre-existing lung disease or cardiogenic pulmonary edema may also benefit from HFNC, although this is not as well demonstrated.<sup>6</sup> It seems that this may be an occasion where we may be able to achieve more by doing less.

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### Membership

Membership in SOCCA is open to all anesthesiologists who have an interest in critical care medicine; non-anesthesiologist-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.

### SOCOA Annual Dues

Active Membership: \$160  
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Medical Student Membership: Free

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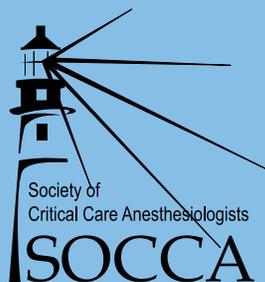
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## Fellowship Review: University of Texas at Houston



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Department of Anesthesiology  
University of Texas at Houston  
Houston, Texas

The Critical Care Fellowship Program at the University of Texas Houston is currently one of the largest Anesthesia Critical Care post-graduate training programs in the United States and has expanded rapidly over the past few years. The fellowship is an ACGME-accredited one-year program that provides access to the full spectrum of state-of-the-art diagnostic equipment, technologically advanced educational resources, and evidence-based management in all facets of Critical Care Medicine. The Critical Care division of the Department of Anesthesiology cares for patients in a mixture of university and community-based hospitals throughout the Houston Area: The Memorial Hermann-Texas Medical Center, MD Anderson Cancer Center, Memorial Hermann Southwest Hospital, and occasionally Houston Methodist Hospital.

At Memorial Hermann-Texas Medical Center (MHTMC), fellows rotate through the only level one trauma center in Houston with helicopter ambulance (“life flight”) service, the first air ambulance program in Texas and second in the nation. MHTMC cares for thousands of trauma victims per year and is regarded as the busiest trauma center in the nation. Our Shock-Trauma Intensive Care Unit (STICU), a 23-bed ICU, cares for patients that have suffered traumatic injury, as well as those recovering

from general, orthopedic, head and neck, obstetric/gynecologic, and oral-maxillofacial surgery. It is staffed by a multi-disciplinary team encompassing a board certified critical care attending (trained in anesthesiology, emergency medicine, or surgery), a critical care fellow (either surgery or anesthesiology), and residents from various specialties. Fellows gain clinical aptitude with a strong focus on patient-oriented care and are exposed to physicians, clinical nurse specialists, chaplains, respiratory therapists, dietitians, and administrative leaders who present examples of effective communication, teamwork, and a culture of welfare. Multiple consult services are available full-time to ensure that all resources are available to optimize patient outcomes. The critical care fellow is expected to function not only as a junior attending, but a collaborator alongside the faculty attending.

We are well-recognized for our 32-bed Neuro-Trauma Intensive Care Unit (NTICU), and are known as an international leader in neurotrauma for treating the highest-acuity patients with brain and spinal cord injuries. Additionally, the Mischer Neuroscience Institute is the epicenter of several multicenter trials and is testing innovative treatments following neurotrauma. Patients with acute neurological injuries benefit from our Level I trauma center

and air ambulance service. The fellow gains proficiency within a team that acts as the primary service from patient’s admission to discharge.

At MD Anderson Cancer Center, our fellows rotate through the Surgical and Medical ICUs. We are proud to note that the ratio of attending to fellows (>10:1) is greater than the minimum required by the ACGME (1:1). Given the complexity and advanced state of their cancers, patients frequently suffer significant organ dysfunction and need aggressive interventions to manage their ailments. Our fellows have the opportunity to work with world-renowned surgeons and are expected to coordinate the care of their patients with consultants. Many patients have cancers that are not amenable to operative intervention and thus require chemo- or radiotherapy. Fellows gain insights into managing patients suffering the significant morbidities and side effects that can result from these interventions.

Memorial Hermann Southwest is one of America’s 50 largest hospitals and a Level III trauma center. Southwest is well known for services that include its heart and vascular institute, cancer center, orthopedics, neurosciences, neonatology, 24-hour emergency services, as well as all types of adult critical care services. Faculty members have

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## Fellowship Review: University of Texas at Houston

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extensive experience managing medical, surgical, neurosurgical, and cardiovascular critically ill patients. Fellows manage and treat patients alongside private practice faculty from various specialties. The fellows thus have exposure to a style of critical care commonly found in the private and community setting.

Faculty members have joined our department from prestigious institutions around the country. They are devoted to the purpose of fellow education and have the enthusiasm for teaching the next generation of leaders both in the Texas Medical Center and across the City of Houston. The fellowship program offers two months of elective time, and fellows may choose to gain additional expertise in the diverse units at MHTMC including Burns, Transplant, Pediatrics, and Cardiovascular ICUs, as well as in the operating room. We offer a well-regarded ultrasound rotation in collaboration with emergency medicine and cardiovascular

medicine. Board preparation sessions are offered for our Anesthesiology Critical Care Fellows that are structured as a combination of discussions and skills sessions. Each session is available via videoconferencing and in person. Monthly journal clubs are moderated by two attendings with experience in evaluation and criticism of published articles. For 2016, our fellows will gain additional expertise in Critical Care education, eventually becoming leaders in the nation for Critical Care Simulation. Through this program, fellows will receive the title and certification award as Fundamental Critical Care Support (FCCS) instructors through the Society of Critical Care Medicine (SCCM).

The city of Houston is home to the world's largest medical center and 26 Fortune 500 companies. *Forbes Magazine* has recently claimed Houston as "America's Coolest City," bustling with culture, affordable living, and one of the nation's fastest growing economies.

Houston is attractive to young professionals and is a great place to raise a family. This charming city has something to offer for everyone, including cultural diversity, thousands of restaurants, pubs, sports teams, and a large theatre district.

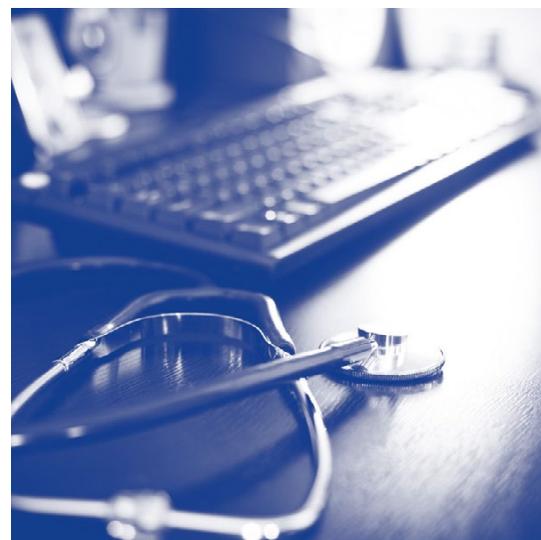
Our Critical Care educational program hosts one of the most medically challenging and diverse critical care fellowships in the country. Furthermore, we are academically productive in applied clinical research. We favorably encourage our fellows to take advantage of the many opportunities for research and publications during their fellowship year. If you are interested in becoming a part of our dynamic team, we encourage you to contact our Fellowship Program Director, Dr. George Williams, at [George.W.Williams@uth.tmc.edu](mailto:George.W.Williams@uth.tmc.edu), or our Program Coordinator, Jonetha Davidson, at [Jonetha.A.Davidson@uth.tmc.edu](mailto:Jonetha.A.Davidson@uth.tmc.edu). We can also be found on Twitter and YouTube!

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