

INTERCHANGE

Society of Critical Care Anesthesiologists Newsletter Volume 30 | Issue 4 | November 2019

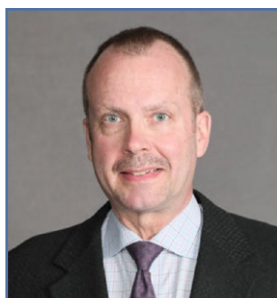
PRESIDENT'S MESSAGE

It is my hope that this issue of the Interchange finds you well. 2020 promises to be a year in which SOCCA will continue to evolve and advance the profession of anesthesiologist intensivists.

Plans are well underway for the annual meeting May 15, 2020 at the Hilton San Francisco Union Square. A board review course comprised of over 30 focused presentations on topics

identified as areas of opportunity by review of the In-Service critical care examination has been developed by our Education Committee and the Program Director Committee. Content will be presented by up and coming junior faculty as identified by the Program Director group. This course will be unique when compared to other review offerings as it focuses on content identified through anesthesiology-based critical care training assessment. This also allows for professional development of our upcoming talent.

The annual meeting content has been finalized and all speakers confirmed. Presentations will be shorter this year, consistent with prior attendee feedback that favors more topics in rapid-presentation style. General session themes include New Perspectives on Traditional ICU Education Topics – A Series of Snap Talks, Providing the Best Value Care to our Patients, End-of-life Care in the Device



**Daniel R. Brown,
MD, PhD, FCCM**

President
Mayo Clinic
Rochester, Minnesota

Era – Practical, Ethical, and Legal Considerations, and The Anesthesiology Intensivist Outside of the ICU – Evolving Roles in the Hospital. Two poster viewing sessions will present cutting edge research. One of the advantages of a May meeting is that this aligns well with the academic year and fellows are able to submit and present work done during their fellowship. As a reminder, the poster submission deadline is January 10, 2020.

The Research Committee will be judging the poster submissions and appropriately recognizing the best work. It should also be highlighted that the IARS/SOCCA aligned meeting day is Saturday, May 16, 2020. Attendees can earn up to 7.5 hours of CME for Friday and up to 9 hours on Saturday, bringing the available CME associated with our annual meeting to 16.5 over this two-day event.

Many of our members are assuming leadership roles in their institutions and practices. Thankfully, we continue to have senior members with considerable leadership experience engaged in the society. In the members only portion of our website, we are developing a repository of content focused on leadership and management. Professional development has been identified by junior and mid-career members as a valued component to membership. Expect to read more about this in future communications.

continued on page 2

JOIN US in San Francisco for the
IARS, AUA and SOCCA Annual
Meetings, May 14 – 18, 2020



SAN FRANCISCO | 2020

Contents

| | |
|--|----|
| President's Message | 1 |
| Editor's Message..... | 2 |
| Membership Committee Update | 3 |
| PDAC Report | 4 |
| Simulation in Critical Care Training: An Invaluable Tool..... | 5 |
| Simulation in Critical Care Training: Shadows of the Platonic Ideal..... | 6 |
| The Intensivist and Ethics..... | 7 |
| Translating Lung Protective Ventilation into the OR..... | 9 |
| How to Be a Good Patient | 11 |
| Job Board..... | 12 |
| SOCCA Board of Directors..... | 16 |
| Call for Articles..... | 17 |
| About SOCCA / Join SOCCA | 17 |

PRESIDENT'S MESSAGE *continued from the cover*

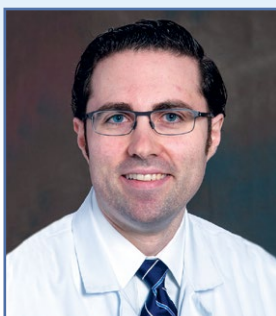
Discussions by the SOCCA Board and Membership Committee emphasized the need to retain young members, as they are the life blood of the Society. After careful consideration, the decision was made to provide free membership to our educational members (residents and fellows). In response to more cut backs in professional development funding as well as the limited resources of our newest professional members, there was also broad support to provide free membership for the first year after training. While this does decrease our membership-associated revenue, this was viewed as an investment in our newest members and thereby the future of the Society.

As part of the membership costs discussions, regular annual membership dues were reviewed. When compared to other

professional society dues, SOCCA is a considerable bargain. The last increase in dues occurred in January 2014. It was felt that an increase in annual membership dues to \$200 was appropriate as well as warranted. A quick review of membership dues and annual meeting registration fees reveals that the cost of SOCCA membership and attending the annual meeting is often a fraction of membership alone to some of the professional societies to which many of our members belong.

As 2019 comes to a close, it is worth reflecting on the year's accomplishments. SOCCA has made great progress in restructuring our Society, increasing member involvement and developing products that our members find of value. All the best to each of you in 2020. 🏠

Editor's Message



Craig S. Jabaley, MD
Chair, SOCCA
Communications
Committee
Assistant Professor
of Anesthesiology
Emory University
School of Medicine
Atlanta, Georgia

It is my pleasure to take the helm of editing *Interchange*, but I must first acknowledge the antecedent efforts of Kevin Hatton. Kevin advanced the content, consistency, and formatting of the newsletter while also soliciting contributions both from the Society's leadership and membership, alike. It will certainly be my goal to maintain forward momentum in these areas. While recently preparing a manuscript concerning shared historical perspective between the aerospace industry and anesthesiology, I came to appreciate the importance of trade publications as a means by which to longitudinally track the thoughts, perceptions, and concerns of professional societies over time. These publications are therefore not only timely and valuable for a professional society's membership but also serve as something of a historical record.

To that end, examining the content of *Interchange* over the years speaks to how certain concerns have come and gone while others have proved to be more enduring. In the present issue, we touch on issues pertaining to ethics, mechanical ventilation, physician wellness, and graduate medical education. Perspectives on these issues have changed over time, and it is therein that *Interchange* stands as an important roadmap to the development of our subspecialty. As an example, the current issue also explores opportunities and challenges in our fellowship match program, and associated predictions will surely be later subject to the critical lens of retrospection.

More broadly, the SOCCA Communications Committee stands ready to help disseminate information from the Society's leadership structure and both promote and recognize member activities. Content in *Interchange*, in order to be truly reflective of our varied interests and priorities, must remain timely, originate from a broad swath of the membership, and speak to issues we find important. Contributions from across the anesthesiology critical care medicine landscape are, therefore, most welcome. 🏠

COMMITTEE REPORT

Membership Committee Update

At the recent SOCCA Board meeting prior to the annual Anesthesiology conference, we continued to explore means by which to grow and sustain the organization's membership. Understanding our membership patterns, and the challenges our members face, is key. One critical issue that we have identified is member loss during transition periods: namely residency to fellowship and fellowship to faculty. We are looking at ways we can leverage technology to help resolve this issue. We are excited to announce that, as of 2019, SOCCA will now provide free membership for residents who enter the San Francisco Match through their first year in practice. SOCCA is also extending the same offer to the 2019-2020 fellowship class. More broadly, providing value to members remains a central tenet of the organization. To that end, the Membership Committee would like to highlight how SOCCA helped one fellowship training program further the development of both their trainees and junior faculty.



Carlee Clark, MD
Chair, SOCCA
Membership Committee
Medical University
of South Carolina
Charleston, South Carolina

The Role of SOCCA Membership in Trainee and Faculty Development



Piyush Mathur MD, FCCM
Anesthesiology Institute,
Cleveland Clinic
Cleveland, Ohio



Eunie Yook, MD
Anesthesiology Institute,
Cleveland Clinic
Cleveland, Ohio

The professional development of both faculty and trainees is an essential aspect of any anesthesiology critical care training program, as outlined by the Accreditation Council for Graduate Medical Education (ACGME) both in the milestones project and program requirements. Since 2015, we have leveraged SOCCA as a key component of our professional development platform for the fellowship. We began by ensuring that fellows become SOCCA members, and they were encouraged to present scholarly activity at the annual meeting. This led to a consistent 80-90% participation rate amongst the fellows (totaling 10) in the subsequent years. Trainees found the meeting's educational content and networking opportunities to be valuable as well. We simultaneously encouraged

faculty to participate and mentor the fellows, which likewise led to increased SOCCA membership amongst our faculty and increased faculty participation at the meeting. We were also encouraged by the SOCCA leadership, including the President, who spent time with our faculty and fellows, acknowledging their participation and sharing the society's vision.

Holding an alumni social event was helpful in keeping continued mentorship and active engagement for our program. These gains have been sustained over many years and have had the additional benefit of attracting very talented residents to our fellowship program, such as our current fellow, Dr. Eunie Yook. When asked about the benefits of SOCCA participation, she shared the following:

"SOCCA 2018 was my first poster presentation at a conference. With a mentor's help, I was able to walk through each step of preparation with excitement. The conference also offered an opportunity to meet and network in more relaxed environment. Through the interaction with people from various backgrounds, I was able to compare different aspects of practice between academic and private settings. Attending helped me to expand my academic knowledge and build a professional network." 🏠

COUNCIL REPORT

Program Directors Advisory Council Chair's Report

There has been a lot happening at the program director level over the last year, and that is by and large substantively good news. One critical topic that bears reporting is the outcome of the Anesthesiology Critical Care Fellowship match that took place in the spring of 2019. The associated trends here bear close review as the news is not entirely positive. The following chart recapitulates the six years that we have had a fellowship match.

As can be seen, the number of registered applicants has trended downward recently, from a peak of 203 in 2017 to only 171 this year. On the other hand, the number of positions offered has steadily increased, from 150 in 2014 to 212 in 2019. This led to a very large percentage of programs going unfilled in the last match, and there was considerable on-line discussion as to the responsible causes. The program directors, who meet three times a year, will have this topic at the top of their agenda during their next meeting at SAAAPM in early November.

On a more encouraging theme, the overall engagement of the program director group in shaping the initiatives for SOCCA going forward has substantially increased. Working groups or committees have formed to address several key issues for the organization. In attempting to grow the organization, the SOCCA Membership Committee recognizes that engaging budding intensivists during fellowship, or even during residency, is critical to making them career-long members and contributors. The Education Committee has similarly echoed the important role of trainees and begun planning a day-long board review course before the annual SOCCA meeting, with most of the teaching to be done by junior faculty within their first five years out of fellowship. An additional committee is devoted to the academic research efforts of SOCCA members, providing opportunities for collaboration and synergy. Finally, a working group has formed with members of the Adult Cardiothoracic Anesthesiology program directors' group in an effort to standardize and streamline the pathway for residents seeking dual training in ACTA and ACCM.

The energy and enthusiasm manifested by the PD cohort is practically palpable, and it gives rise to great optimism for the future of the organization going forward. It is at the level of the program directors that the efforts to turn the tide of recruiting talented anesthesiology residents into critical care will need to be most keenly focused. The good news is that this is a phenomenally talented and dedicated group, which is generating a momentum that is bound to be contagious, promising a bright future for SOCCA and anesthesiologist-intensivists nationally. 🏠



**Nicholas Sadovnikoff,
MD, FCCM**
Chair, Program
Directors Advisory
Council
Brigham and
Women's Hospital
Boston, MA

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|-----------------------------------|------|------|------|------|------|------|
| Applicant Data | | | | | | |
| Applicant registrations | 196 | 189 | 194 | 203 | 187 | 171 |
| % Applicant ranks lists submitted | 147 | 148 | 153 | 157 | 156 | 144 |
| Matched total | 127 | 137 | 149 | 150 | 151 | 139 |
| Unmatched totals | 20 | 11 | 4 | 7 | 5 | 5 |
| Applicants matching (% overall) | 86% | 93% | 97% | 96% | 97% | 97% |
| Total withdrawals | 20 | 19 | 16 | 11 | 18 | 10 |
| Program Data | | | | | | |
| Participating programs | 47 | 49 | 52 | 53 | 57 | 62 |
| Positions offered | 150 | 167 | 186 | 202 | 209 | 212 |
| Positions filled | 127 | 137 | 149 | 150 | 151 | 139 |
| Unfilled positions | 23 | 30 | 37 | 52 | 58 | 73 |

FEATURED ARTICLE

Two Perspectives on Simulation in Critical Care Training

Perspective One: An Invaluable Tool

1

The restriction of trainee work hours in 2006 transformed post-graduate medical education. While intended to promote work-life balance and wellness, the undesired consequence was limitation of experiential clinical learning opportunities. Simulation Based Medical Education (SBME) has helped fill this gap by providing an opportunity for deliberate practice with immediate feedback, enhancing acquisition of medical knowledge and skills.^{1,2} Through the years, SBME has been increasingly and broadly used in medical schools and residency training programs.^{3,4} SBME allows practice with little risk, can be high or low fidelity, and is considered an immersive enactment of a medical scenario or skill through the use of patient actors (i.e., standardized patients), interactive mannequins, or task trainers.⁵

In the mid to late 1980's, high-fidelity SBME was pioneered at Stanford and the University of Florida (UF), with the development of technologically advanced interactive mannequins. Stanford focused on crisis resource management and team dynamics, while UF focused on teaching residents machine errors and anesthesia techniques.⁶ Currently, the UF critical care medicine (CCM) fellowship is heavily based in simulation, utilizing it for both education and skills acquisition. Borrowing from pediatric critical care, our inaugural three-day multidisciplinary CCM boot camp proved to be a valued experience and facilitated fellow transition to clinical duties. The program was designed for deliberate practice of commonly encountered critical situations and procedures. The simulator sessions allowed the participants to utilize their 5 senses to assess a situation and then devise and execute a treatment plan. Unexpected benefits included fellow and faculty team building as well as identification of fellow strengths and weaknesses.⁷ In addition, as part of the CCM annual didactics, fellows and residents complete 25 simulation sessions designed around the ABA CCM content outline. These sessions utilize high-fidelity interactive mannequins, difficult airway mannequins, and task



**Peggy A. White,
M.D.**

Program Director,
Anesthesiology
Critical Care
Fellowship
University of Florida
Gainesville, Florida

trainers. Central venous access is amenable to a prototypical task trainer, which can be used in conjunction with interactive ultrasound and on-line learning, providing immediate feedback and promoting standardization of clinical practice. Studies have shown that use of task trainers decreases number of needle passes, increases learner knowledge and confidence.^{8,9}

SBME can also be used for skill assessment. In the late 1990's, the American College of Surgeons (ACS) began to gain experience in the utilization of simulation for knowledge, skill acquisition, and testing.³ It became evident that skills gained in simulation translated to improvement in surgical performance in the operating room (OR).^{10,11} As a result, the ACS now uses simulation for skills assessment in many areas. At our institution,

new surgical residents are required to successfully complete essential surgical skills via simulation and task training prior to entering the OR.

Simulation may have other, indirect benefits. Its incorporation into our anesthesiology clerkship for fourth year medical students has been well received, ranked highly by the students, and increased the number of internal anesthesiology candidates entering our residency program.

continued on page 8

FEATURED ARTICLE

Two Perspectives on Simulation in Critical Care Training

Perspective Two: Shadows of the Platonic Ideal

2

The aerospace industry is rightly recognized as a model for the utility of high-fidelity simulation, and the medical education community has sought to apply and extend this experience. However, a staggering amount of research, engineering, and resources underlies the success of aerospace simulation, which is likely underappreciated by physicians. From early jet fighters to the space shuttle and beyond, aerospace developed specific technologies to study, regulate, and compensate for the cognitive and psychological deficits in human interactions with complex systems that cannot tolerate failure. Furthermore, sophisticated models of these complex systems, and the forces governing them, were developed to enable truly high-fidelity simulation. While we share similar aspirations in medicine, we often mimic this process superficially, often believing that any act of simulation will produce the desired skill and further be generalizable to the subjects' overall ability to function as anesthesiologists.

Astronauts, for example, will spend as much as one third of their *total* training in a simulator, including both partial task trainers and high-fidelity. Given the expense of this investment, the cognitive goals are extraordinarily well researched and carefully implemented by professional teams of engineers, technicians, and psychologists. In comparison, simulations in medical education are often created and implemented by lay educators with little technical background, constitute a minute fraction of overall training time, and lack rigor in their evaluation. Even when more advanced technologies are utilized, I almost always see them reduced to a PBL discussion with visual aids rather than recreating a human interface with a complex system.



Mark E. Caridi-Scheible, MD
Program Director,
Anesthesiology
Critical Care
Fellowship
Emory University
Atlanta, Georgia

While many studies confirm that trainees generally enjoy simulations or subjectively *feel* as if they learned something, rigorous studies have not convincingly or consistently demonstrated the utility of, or retention of knowledge with, medical simulation beyond a few isolated tasks. However, near-mystical powers are often attributed to simulation. Given the increasing paucity of time in medical education, it is worth asking: are we using simulation for the sake of simulation, or because everyone is doing it? Does our implementation objectively solve an educational deficit that cannot be met in any other way?

The critical evaluation of medical simulation must be bidirectional. Often, participants are assessed by their ability to adhere to elements of a predefined checklist, with failure conceptualized as intrinsic

to the participant. However, failures in process adherence are potentially complex. Is the simulation itself sufficiently “real” to elicit typical clinical responses? Indeed, unexpected behaviors, superficially conceptualized as adherence failures, that are elicited through the process of simulation may be used to refine associated processes of care, or clinical environments. Again, we can look to the aerospace industry to understand the value of simulation when it comes to engineering processes by which humans interact with complex systems.

This is not to say that there is no role for simulation. I am, in fact, fascinated by the technology and the theory and have spent a significant amount of effort exploring both. However, if we are to engage in high-fidelity simulation, we need to find a way to engage in it professionally and with greater scientific rigor. 🏛️

REFERENCES

- Laschinger S et al. Effectiveness of simulation on health profession students' knowledge, skills, confidence and satisfaction. *Int J Evid Based Healthc*. 2008 Sep;6(3):278-302. doi: 10.1111/j.1744-1609.2008.00108.x.
- Khanduja PK et al. The role of simulation in continuing medical education for acute care physicians: a systematic review. *Crit Care Med*. 2015 Jan;43(1):186-93. doi: 10.1097/CCM.0000000000000672.
- Roberts F and Cooper K. Effectiveness of high fidelity simulation versus low fidelity simulation on practical/clinical skill development in pre-registration physiotherapy students: a systematic review. *JBIS Database System Rev Implement Rep*. 2019 Jun;17(6):1229-1255. doi: 10.11124/JBISRIIR-2017-003931.

FEATURED ARTICLE

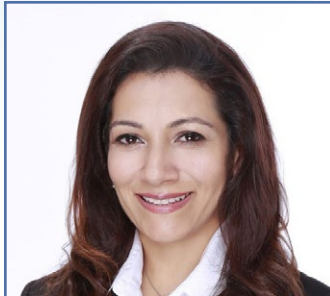
The Intensivist and the Moral and Ethical Dilemmas of Modern-Day Organ Donation

Since the first organ transplant from a brain-dead donor performed in 1963 by a Belgian surgeon, the topic of organ donation and brain-dead donors has often been a moral and ethical impasse amongst the public as well as physicians.¹ Intensivists, along with Neurologists, have become the primary referring physicians for these donations. After the publication of the Harvard committee's report on guidelines for establishing 'brain death' in 1968, both the declaration of death by brain stem testing criteria, as well organ donation from brain dead donors, has become morally tolerable.² Yet, saving lives is a physician's main role both in the ICU, and out of it. The fundamental problem that differentiates donation from a living donor and a brain dead one is defining death certainly and irrefutably in a patient that, until a few hours earlier, was 'alive' with every valiant effort made to bring back to meaningful existence.

Organ donation saves lives of recipients and is a generous gift that prevents suffering. Nearly 95,000 American await organ transplants with kidneys being most in demand. In a 1967 commentary in the Annals of Internal Medicine, Thomas Starzl wrote about transitioning from alive donors to brain dead ones:

"Unfortunately, success will not imply that an ethical panacea will have been found, primarily because the terminal events in a prospective cadaveric donor are of such importance in determining the quality of a subsequently transplanted organ. It is conceivable that this fact could lead to subtle or even major adjustments in care that would be designed for the protection of the organ to be removed rather than for the benefit of its donor."³

The physicians who fight for the lives of their patients day and night may feel morally and ethically challenged at shifting gears from 'curing often' to 'comforting' loved ones. Referring a patient for the removal of their vital organs, in pursuit of their successful transplantation into a recipient, silently shifts the focus of intensive care toward a second individual for whom the physician may not have a direct duty of care.



**Shahla Siddiqui, MBBS,
D. ABA, MSc
(Medical ethics)**
Beth Israel Deaconess
Medical Center
Boston, Massachusetts

As doctors, we take vows to preserve life and to "do no harm." This shift, therefore, despite years of experience, does not come naturally. We grieve for our patients who pass on, as the families do, and often, there is a sense of defeat that pervades a hard struggle in trying to salvage life for a critically ill ICU patient. Our duty of care now shifts to preservation of vital organs, rather than a physically present patient. These issues are magnified, for example, when organs have to be preserved on ECMO after brain death criteria are met.⁴ Brain death criteria in these circumstances are often abstruse, as conventional apnea tests may not apply, which are the backbone of the criteria.⁵ There are no agreed-upon guidelines of establishing brain death in such patients.

There is a wide gap between the demand for organs and the supply of medically suitable ones. Physicians can be conflicted and out of their moral depth when the duty to the patient and their family, and the duty to society, are intersecting.⁶ There are times when physicians would oblige family members and defer donation even in patients who may have wished to donate.⁷ The law and policy do not dictate these important decisions that are to be made instantaneously.⁸ Even in countries where 'presumed consent' exists for organ donation unless the patient has opted out, physicians may not refer for organ donation when they feel the family oppose it.⁹ Establishing brain death can be a final and irreversible proclamation that many physicians may wish to avoid, in favor of withdrawing non-beneficial life sustaining treatment.¹⁰ These morally and ethically disturbing

continued on page 8



points must be acknowledged and addressed when designing frameworks for physicians to work within, especially when faced with ever-advancing technologies that further blur the line between an unquestionable death and an organ-preserved brain dead patient.¹¹ Guidelines must be developed concerning the determination of brain death while on ECMO and the use of technology to preserve organ function. At the end of the day, moral and ethical 'buy-in' is essential, and there is no better individual to do so than the patient him- or herself giving their own autonomous choice well in advance preemptively. 🏠

REFERENCES

1. Freeman RB, Bernat JL. Ethical issues in organ transplantation. *Progress in Cardiovascular diseases*. Volume 55, Issue 3, Nov-Dec 2012, pages 282-289.
2. Aulisio MP, Devita M, Leubke D. Taking values seriously: Ethical challenges in organ donation and transplantation for critical care professionals. *Crit Care Med*. 2007 Feb;35(2 Suppl):S95-101.
3. Starzl TE. Ethical problems in organ transplantation. A clinician's point of view. *Ann Intern Med*. 1967;67:32-36. doi:10.7326/0003-4819-67-3-32
4. Richards JR. *The Ethics of Transplants: Why Careless Thought Costs Lives*. Oxford University Press. 2012.
5. Lesieur O, Gentuël L, Leloup M. A few realistic questions raised by organ retrieval in the intensive care unit. *Ann Transl Med*. 2017;5(Suppl 4):S44. doi:10.21037/atm.2017.05.08
6. Price D. End-of-life treatment of potential organ donors: paradigm shifts in intensive and emergency care. *Med Law Rev* 2011;19:86-116.
7. Coggon J. Elective ventilation for organ donation: law, policy and public ethics. *J Med Ethics* 2013;39:130-4.
8. Myburgh J, Abillama F, Chiumello D, et al. End-of-life care in the intensive care unit: Report from the Task Force of World Federation of Societies of Intensive and Critical Care Medicine. *J Crit Care* 2016;34:125-30.
9. Rady MY, Verheijde JL. The science and ethics of withdrawing mechanical positive pressure ventilatory support in the terminally ill. *J Palliat Med* 2013;16:828-30.
10. Shemie SD, Hornby L, Baker A, et al. International guideline development for the determination of death. *Intensive Care Med* 2014;40:788-97.
11. Curtis JR, Vincent JL. Ethics and end-of-life care for adults in the intensive care unit. *Lancet* 2010;376:1347-53.

FEATURED ARTICLE *Perspective One: An Invaluable Tool* *continued from page 5*

The literature is clear that simulation is a powerful educational tool, it improves medical knowledge, team performance, and is well received by participants. However, how this affects patient outcome is difficult to ascertain. In addition, simulation is very expensive. It requires trained support staff, faculty time and maintenance of the interactive devices. However, given the resources, simulation based medical education is a powerful and engaging educational tool. 🏠

REFERENCES:

1. Armenia S, et al. The Role of High-Fidelity Team-Based Simulation in Acute Care Settings: A Systematic Review. *The Surgery Journal*. 2018;4(3): 136-151.
2. Issenberg B, et al. Simulation and New Learning Technologies. *Medical Teacher*. 2001; 23 (1):16-23.
3. Gardner AK, et al. Simulation-based Surgical Education: Best Practices Across Surgical Specialties Relating to Simulation-Based Training. *Surgery*. 2015; Nov. 1395-1402.
4. Byrne AJ, Greaves JD. Assessment Instruments used During Anesthetic Simulation: Review of Published Studies. *Br J Anaest*. 2001; 86: 445-450.
5. Gordon JA, et al. "Practicing" Medicine without Risk: Students' and Educators' Responses to High-fidelity Patient Simulation. *Academic Medicine*. 2001; 76 (5): 469-472.
6. McGahie WC, et al. Revisiting 'A Critical Review of Simulation-based Medical Education Research: 2003-2009'. *Medical Education*. 2016; 50: 986-991.
7. Nishisaki A, et al. A multi-institutional high-fidelity simulation "boot camp" orientation and training program for first year pediatric critical care fellows. *Pediatr Crit Care Med*. 2009; 10(2):157-162.
8. Robinson AR, et al. A mixed-Reality Part-Task Trainer for Subclavian Venous Access. *Simulation in Healthcare*. 2014; 9 (1): 56-64.
9. Soffler MI, et al. Central Venous Catheterization Training: Current Perspectives on the Role of Simulation. *Advances in Medical Education and Practice*. 2018; 9: 395-403.
10. Issenberg SB, et al. Simulation Technology for Health Care Professional Skills Training and Assessment. *JAMA*. 1999; 282:861-866.
11. Melvin WS, et al. Laproscopic Skills enhancement. *Am J Surg*. 1996;172:377-379.

TOPICAL REVIEW

Questions Linger About the Clinical Impact of Translating Lung Protective Ventilation into the Operating Room

Landmark trials over the past three decades have fostered appreciation for the potentially injurious effects of mechanical ventilation. Current approaches to lung protective ventilation include the limitation of tidal volumes (V_T) to 6 ml/kg PBW, restriction of plateau pressures (P_{plat}) to no more than 30 cm H_2O , and attention to driving pressures. As these practices have become commonplace in the ICU, intraoperative mechanical ventilation has trended toward lower V_T and higher positive end expiratory pressure (PEEP).^{1,2} However, the clinical impact of intraoperative lung protective mechanical ventilation in patients with uninjured lungs remains unclear.



Milad Sharifpour, MD
Emory University
Atlanta, Georgia

Weingarten et al. reported improved oxygenation and respiratory mechanics in patients undergoing abdominal surgery who received V_T 6 ml/kg predicted body weight (PBW), PEEP 12 cm H_2O , and recruitment maneuvers (RM) compared to those assigned to V_T 10 ml/kg PBW, without PEEP and RM.³ Two multicenter trials in patients undergoing abdominal surgery comparing protective ventilation (V_T 6-8 ml/kg, PEEP \geq 5, repeated RM) with more conventional ventilation (large V_T , no PEEP or RM) demonstrated a reduced risk of postoperative pulmonary and extrapulmonary complications in their respective intervention groups.^{4,5} It is not possible, however, to ascertain which of the bundled interventions was responsible for the reported improvement in outcomes.

Is there an optimal intraoperative PEEP?

Atelectasis is reported in up to 90% of patients undergoing general anesthesia, especially when accompanied by neuromuscular blockade.⁶ This leads to heterogeneous distribution of collapsed and overdistended areas in lungs of anesthetized patients.

While mechanical ventilation with small V_T without PEEP can promote atelectasis formation and cyclic opening and closing of alveoli, the optimal level of intraoperative PEEP is not well defined, and it remains unclear whether improved oxygenation and respiratory mechanics lead to improved clinical outcomes. Multiple pro- and retrospective studies have addressed this issue, and their findings are equivocal.

In an observational study of patients undergoing major abdominal surgery and those undergoing craniotomies, application of PEEP \geq 5 cm H_2O was associated with decreased incidence of postoperative pulmonary complications (PPC) compared to the application of PEEP < 5 cm H_2O .⁷ Of interest, while application of PEEP > 5 cm H_2O reduced the incidence of PPC and hospital length of stay in patients undergoing major abdominal surgery, these findings were not observed in patients undergoing craniotomy. A systematic review and individual patient data meta-analysis showed reduced incidence of PPC in patients assigned to low V_T and PEEP \geq 5 cm H_2O (8). There was no difference in the incidence of PPC between patients who received low V_T with low PEEP and those who received low V_T and high PEEP. In total, these findings suggested that relatively low, but nonzero, levels of PEEP are likely appropriate for most non-obese patients, and that the routine application of PEEP may prevent postoperative pulmonary complications in vulnerable patient groups, such as those undergoing abdominal surgery.

Are recruitment maneuvers valuable?

Given the equivocal findings about PEEP in isolation, the question arises as to whether or not PEEP titration in isolation

continued on page 10

can overcome dense atelectasis. The combination of RM and PEEP is increasingly commonplace in ARDS protocols aiming to determine the optimal PEEP, and their combination has been shown to improve oxygenation in critically ill adults.

However, in a multicenter RCT of non-obese patients undergoing open abdominal surgery, no difference was demonstrated in the incidence of PPC between patients assigned to PEEP 0-2 cm H₂O without RM and those assigned to PEEP 12 cm H₂O with RM. All patients were ventilated with V_T of 8 ml/kg PBW.⁹ In a second recent RCT obese patients undergoing laparoscopic or non-laparoscopic surgery expected to last at least 2 hours were randomized to receive 12 cm H₂O of PEEP and frequent RM compared to 4 cm H₂O of PEEP and no RMs. All patients received volume controlled mechanical ventilation with VT of 7 ml/kg PBW. Similarly, there was no reduction in the incidence of PPC within the first five postoperative days.¹⁰ Fewer patients randomized to the high PEEP and RM strategy experienced hypoxemia, however.


The findings from these studies suggest that high levels of PEEP with frequent RM provide no additional protective benefit in patients with uninjured lungs who undergo mechanical ventilation for elective surgery.

Are we examining the wrong variables?

To further complicate matters, a recent meta-analysis of individual patient data from 17 RCT of lung protective ventilation during general anesthesia for surgery suggested that driving pressure (ΔP), a variable that is associated with lung strain and calculated as P_{plat} – PEEP, was the only variable associated with the development of PPC, while V_T and PEEP did not affect the incidence of PPC.¹¹ A similar finding was also observed in a meta-analysis of individual patient data from 3562 patient with ARDS. Driving pressure was the only ventilation variable that was associated with survival, even among the patients that received lung protective V_T and plateau pressures, and V_T and PEEP affected mortality only if they led to a reduction in driving pressure.¹² A recent prospective RCT comparing ΔP guided protective ventilation versus conventional lung protective ventilation (V_T 6 ml/kg PBW, PEEP 5 cm H₂O) during one-lung ventilation in patients undergoing thoracic surgery showed reduced incidence of PPCs in the intervention group.¹³ It should be noted that the variables that define ΔP are themselves highly predictive of survival. Therefore, it remains unclear whether ΔP is simply a marker of lung compliance or a variable that we should routinely target to optimize intraoperative lung ventilation.

Conclusions

Despite conflicting evidence as to its clinical impact, lung protective mechanical ventilation is increasingly employed in the operating room. While ventilation with reduced V_T has improved mortality in patients with ARDS, the impact of intraoperative lung protective ventilation on clinical outcomes, in patients with non-

injured lungs undergoing elective surgery, is not as clear. While earlier trials of protective ventilation with small V_T, high PEEP, and frequent RM demonstrated improved clinical outcomes in high risk patients undergoing abdominal surgery, more recent trials question the benefit of high PEEP during laparoscopic and non-laparoscopic abdominal surgery, as well during craniotomy.^{7,9,10} The Severinghaus Lecture on Translational Science at the annual Anesthesiology meeting this year by Dr. Jeanine Wiener-Kronish pertained to personalized PEEP and included discussion of the potential role of electrical impedance tomography in ascertaining individualized ideal PEEP. Also pertinent was her assertion that critical care anesthesiologists are uniquely poised to contribute to further advances in the domain of lung protective mechanical ventilation. 

REFERENCES:

1. Wanderer JP, Ehrenfeld JM, Epstein RH, et al. Temporal trends and current practice patterns for intraoperative ventilation at U.S. academic medical centers: a retrospective study. *BMC Anesthesiol* 2015;15:40.
2. Intraoperative lung-protective ventilation trends and practice patterns. *Anesth Analg*. 2015;121:1231-1239.
3. Weingarten TN, Whalen FX, Warner DO, Gajic O, Schears GJ, Snyder MR, et al. comparison of two ventilatory strategies in elderly patients undergoing major abdominal surgery. *Br J Anaesth* 2010;104:16-22.
4. Futier E, Constantin JM, Paugam-Burtz C, et al. A trial of intraoperative low-tidal volume ventilation in abdominal surgery. *N Engl J Med* 2013;369:428-437
5. Severgnini P, Selmo G, Lanza C, et al. Protective mechanical ventilation during general anesthesia for open abdominal surgery improves postoperative pulmonary function. *Anesthesiology* 2013;118:1307-21
6. Hedenstierna G, Rothen HU. Atelectasis formation during anesthesia: Causes and measures to prevent it. *J Clin Monit Comput*. 2000;16:329-35
7. De Jon MAC, Ladha KS, Vidal Melo MF, et al. Differential effects of positive end-expiratory pressure (PEEP) on respiratory outcome in major abdominal surgery versus craniotomy. *Ann Surg* 2016;264:362-69
8. Serpa Neto A, Hemmes SN, Barbas CS, et al. PROVE Network Investigators. Protective versus conventional ventilation for surgery: A systematic review and individual patient data meta-analysis. *Anesthesiology* 2015;123:66-78
9. Hemmes SN, Gama de Abreu M, Pelosi P, Schultz MJ, et al. High versus low positive end-expiratory pressure during general anaesthesia for open abdominal surgery (PROVHILO trial): a multicentre randomised controlled trial. *Lancet* 2014;384:495-503
10. Bluth T, Serpa Neto A, Schultz MJ, Pelosi P, Gama de Abreu M, et al. *JAMA*. 2019;321(23):2292-2305.
11. Serpa Neto A, Hemmes SN, Barbas CSV, et al. Association between driving pressure and development of postoperative pulmonary complications in patients undergoing mechanical ventilation for general anesthesia: A meta-analysis of individual patient data. *Lancet Respir Med* 2016;4:272-80
12. Amato MPB, Meade OM, Slutsky AS, et al. Driving pressure and survival in the acute respiratory distress syndrome. *NEJM* 2015;372:747-55
13. Park M, Ahn HJ, Kim JA, et al. Driving pressure during thoracic surgery: A randomized controlled trial. *Anesthesiology* 2019;130:385-93

WELLNESS SERIES

How to Be a Good Patient

Sooner or later, many of us will be faced with an unpleasant reality: a major health problem requiring medical care. Often, this may entail surgery or critical care. In theory, physicians should be well-prepared for this eventuality. After all, we have a great deal of first-hand knowledge about the perioperative environment and should be comfortable negotiating difficult or uncomfortable situations. Why then do we feel so much stress when these problems hit close to home?

Certainly, being diagnosed with a significant illness is a traumatic experience for anyone. Even if the condition is curable, the consequences can be substantial. Physicians tend to be driven and accustomed to functioning at a high level. Perfectionism is very common amongst physicians, and unrealistic expectations can lead to increased psychological fallout when one is limited mentally or physically.¹ This can result in depression, loss of self-worth, and anxiety about the likelihood and degree of functional recovery. For physicians, loss of one's lifestyle and self-image can produce a form of mourning. Counter to what might be expected, common medical conditions that are not thought of as particularly shameful, such as heart disease and diabetes, may result in self-imposed stigma in physicians.² On a more practical level, health problems can often result in increased out-of-pocket expenses and decreased income, both of which can lead to financial difficulties. Increased debt has been associated with poorer subjective health and health-related behaviors.³

Anesthesiologists in particular share several personality traits that can be problematic when dealing with illness. More so than other physicians or non-medical individuals, we are prone to harm avoidance, which manifests as increased worrying, pessimism, and doubtfulness.⁴ Studies have also found anesthesiologists to be more tense and less self-assured than the general population, and to be more conscientious, which can be linked to perfectionism.⁵ The need for self-determination and organization can be problematic when faced with loss of control resulting from ill health.

In the face of a medical crisis, such traits can lead to maladaptive responses. In his deeply affecting memoir, *When Breath Becomes Air*, Paul Kalanithi vividly describes his need for a definitive prognosis after he was diagnosed with Stage IV lung cancer during his residency. When his oncologist repeatedly rebuffed his requests, he initially bristled at her stonewalling: "How dare she? I thought. *This is how doctors—doctors like me—understand prognostication. I have a right to know.*" Kalanithi was struggling to hold on to his self-image as a doctor, to maintain control over the situation. However, he eventually



Jordan Brand, MD
San Francisco VA
Health Care System
UC San Francisco
San Francisco,
California

realized that "while being trained as a physician and scientist had helped me process the data and accept the limits of what that data could reveal about my prognosis, it didn't help me as a patient... It occurred to me that my relationship with statistics changed as soon as I became one."⁶ Much of *When Breath Becomes Air* details Kalanithi's attempts to reconcile his concept of himself with his medical condition and discover how he can continue to practice medicine in the new reality he inhabits. "Torn between being a doctor and patient, delving into medical science and turning back to literature for answers, I struggled, while facing my own death, to rebuild my old life—or perhaps find a new one."⁶

Several other personality traits common in anesthesiologists, it should be said, may be turned to one's advantage. Anesthesiologists score higher on measures of cooperativeness, as evidenced by a focus on long-term goals and a tendency towards empathy, helpfulness, and compassion; these tendencies can be very productive when harnessed and may enhance our ability to heal and to navigate the medical system.⁴ We are, by necessity, comfortable with a collaborative work environment and tend to have a broad knowledge of medical conditions. Those of us who work in critical care are particularly attuned to making difficult decisions with life-altering implications.

continued on page 12



The key to managing these contradictions, it seems, is to utilize our medical abilities without being too attached to our role as The Doctor. When faced by illness, we must recognize that we are not the only professional on the case, and that we are not responsible for diagnosing and fixing every problem involved. Many times, it is more effective (and more psychologically manageable) to stay in the realm of the patient. Besides trusting other physicians to take care of us, we must also relinquish some of our self-reliance and take advantage of our families and support networks.

Often, the need to “do more” and “fix things” is our response to fear, anxiety, and despair. However, these emotions cannot be suppressed indefinitely and must be faced in a proactive and constructive way. We must be kind to ourselves and conscious of our roles as both patient and practitioner. As the prayer says, it is critical to change the things we can, accept those things we cannot, and have the wisdom to know the difference. 🏠

REFERENCES:

1. Peters M and King J. Perfectionism in doctors. *BMJ* 2012; 344: e1674.
2. Myers MF and Gabbard GO. *The Physician as Patient*. Washington, D.C.: American Psychiatric Publishing, 2008: 56.
3. Turunen E and Hiilamo H. Health effects of indebtedness: a systematic review. *BMC Public Health* 2014; 14: 489.
4. Kluger MT et al. Personality traits of anaesthetists and physicians. *Anaesthesia* 1999; 54: 926-35.
5. Reeve PE. Personality characteristics of a sample of anaesthetists. *Anaesthesia* 1980; 35: 559-68.
6. Kalanithi P. *When Breath Becomes Air*. New York: Random House, 2016: 123-39.



JOB BOARD

Have you visited SOCCA's Job Board recently? Read members-only job posts—including a position with the Department of Cardiovascular and Thoracic Surgery at the University of Louisville School of Medicine—at SOCCA's Job Board. If you would like to post a job, please email a short description and/or PDF flyer including location, contact information, and closing date to SOCCA Society Director, Vivian Abalama, IOM, CAE at vabalama@iars.org.

**Join us in
SAN FRANCISCO**



SOCIETY OF
CRITICAL CARE
ANESTHESIOLOGISTS
SOCCA

2020

May 14: SOCCA Critical Care
Medicine Board Review Course

May 15: SOCCA 2020 Annual
Meeting

May 16: SOCCA Critical Care Update
& IARS, AUA and SOCCA Aligned
Meeting Day

Hilton San Francisco Union Square
San Francisco, California

Visit meetings.iars.org for more information

IARS AUA SOCCA

ANNUAL MEETINGS

Abstract
Submission
is now
available



AUA

Association of University Anesthesiologists



SOCIETY OF
CRITICAL CARE
ANESTHESIOLOGISTS
SOCCA



IARS

2020

We're headed to the
San Francisco Hilton
Union Square,
May 14–18, 2020 and
would love to see
you there!

The deadline to submit abstracts is
January 10, 2020.

Abstract submission and award
information is available at
meetings.iars.org

MULTICENTER PRAGMATIC ANESTHESIOLOGY CLINICAL TRIALS (IMPACT)* AWARD

NOW ACCEPTING LETTERS OF INTENT FOR THE
2020 IMPACT GRANT CYCLE!

THE PROCESS

Write and submit a letter of intent (LOI). If your LOI is accepted, you'll be invited to write a full proposal.

One \$50,000 grant will be awarded.

THE PURPOSE

The award is meant to support a grantee to plan and successfully complete an informative and innovative pilot study. The methods of the pilot study are not prescribed. The knowledge gained from the pilot study should enable the design and submission of a multicenter, pragmatic clinical trial grant proposal.



THE DATES

LOI due: 12/16/19

Full Grant Proposal due: 3/23/20



THE AWARD

\$50,000.00

Whether you decide to apply or not, if multi-center pragmatic trials are your passion, then join us for our third IMPACT program meeting in San Francisco on Sunday, May 17, from 2:30 – 6:00 pm, during the 2020 IARS, AUA, SOCCA Annual meetings. The program will showcase promising pragmatic trials from some of tomorrow's leaders in anesthesiology research.

*IMPACT aims to stimulate pragmatic research in the U.S. with the goal of advancing scientific knowledge in anesthesiology, and enhancing care in perioperative medicine, critical care, pain management, and peri- and post-partum care.

To learn more, obtain guidelines and apply, visit IARS.org/impact



SOLCA Board of Directors

OFFICERS

President

Daniel R. Brown, MD, PhD, FCCM
Mayo Clinic
Rochester, Minnesota



President-Elect

Miguel A. Cobas, MD, FCCM
University of Miami
Miami, Florida



Treasurer

Michael H. Wall, MD, FCCM
University of Minnesota
Minneapolis, Minnesota



Secretary

Mark E. Nunnally, MD, FCCM
New York University
Langone Medical Center
New York, New York



Immediate Past President

Avery Tung, MD, FCCM
University of Chicago
Chicago, Illinois



DIRECTORS

Director

James M. Blum, MD, FCCM
Emory University
Hospital
Atlanta, Georgia



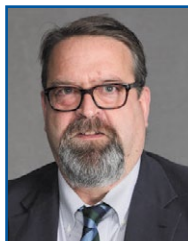
Director

Adam Evans, MD, MBA, FCCM
Anesthesia Associates
of Morristown
Morristown,
New Jersey



Director

Michael Haney, MD, PhD
Umea University
Umea, Sweden



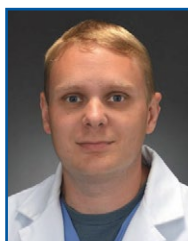
Director

Linda Liu, MD
University of California
San Francisco,
California



ASA Delegate (Ex-Officio)

S. Patrick Bender, MD
University of Vermont
Medical Center
Burlington, Vermont



Director

T. Miko Enomoto, MD
Oregon Health &
Science University
Portland, OR



Director

Brigid C. Flynn, MD
University of Kansas
Medical Center
Kansas City, KS



Director

Kevin W. Hatton, MD
University of Kentucky
College of Medicine
Lexington, KY



Director

Stephen D. Surgenor, MD
Dartmouth Hitchcock
Medical Center
Lebanon,
New Hampshire



ASA Alternate Delegate

Dinesh Kurian, MD
The University of
Chicago Medicine
Chicago, Illinois



SOCCA Information

EMAIL

Meetings: SOCCAm meetings@iars.org

Membership information: SOCCA@iars.org

VISIT THE SOCCA WEBSITE at:
www.SOCCA.org

MEMBERSHIP

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.

MEMBERSHIP BENEFITS

Discounted pricing for the SOCCA Annual Meeting, a forum for the specialist with broad-based interests, including respiratory therapy, postoperative cardiac surgical, neurological and transplant management, and trauma care

Discounted membership in the IARS, which includes access to two peer-reviewed journals – Anesthesia & Analgesia and A&A Case Reports, free journal CME, and eligibility to apply for IARS research grants

Free ICU Residents' Guide

Free quarterly newsletter Interchange, which covers ethically controversial issues, survey of practice patterns, and historical aspects of anesthesiology

Renew or join today at www.SOCCA.org/membership.php

EDITORIAL NOTES

Editor

Craig S. Jabaley, MD
Assistant Professor of
Anesthesiology
Emory University School
of Medicine
Atlanta, Georgia

Editorial Board

Zdravka Zafirova, MD
Newsletter Associate Editor

Jordan Brand, MD
Gernman Echeverry, MD
Christopher P. Henson, DO

Fellowship Program Reviews

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: Vivian Abalama, IOM, CAE at vabalama@iars.org.

Editorial Policy

The opinions presented are those of the authors only, not of SOCCA. Drug dosages, accuracy and completeness of content are not guaranteed by SOCCA.

CALL FOR ARTICLES



If you have an interesting case report, an idea for a pro-con discussion, a review idea, or an opinion on a recently published article, please review the [submission guidelines](#), then submit your proposal/article to the Newsletter Editor, Craig S. Jabaley, MD at csjabaley@emory.edu on or before January 17, 2020. If your article is chosen for the newsletter, we will contact you for editing and formatting. Thank you.